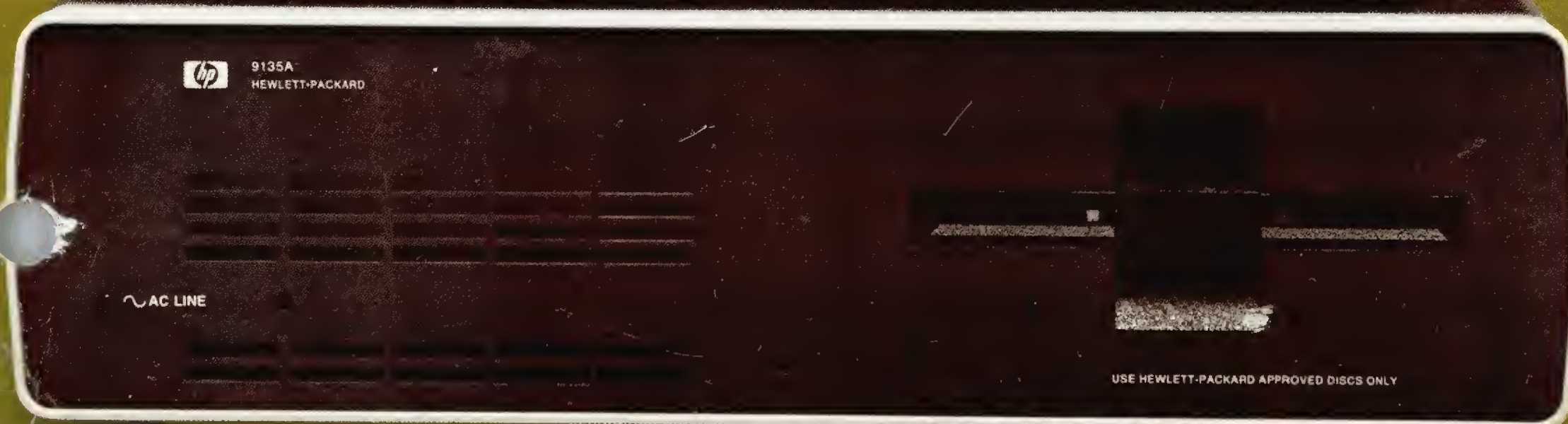
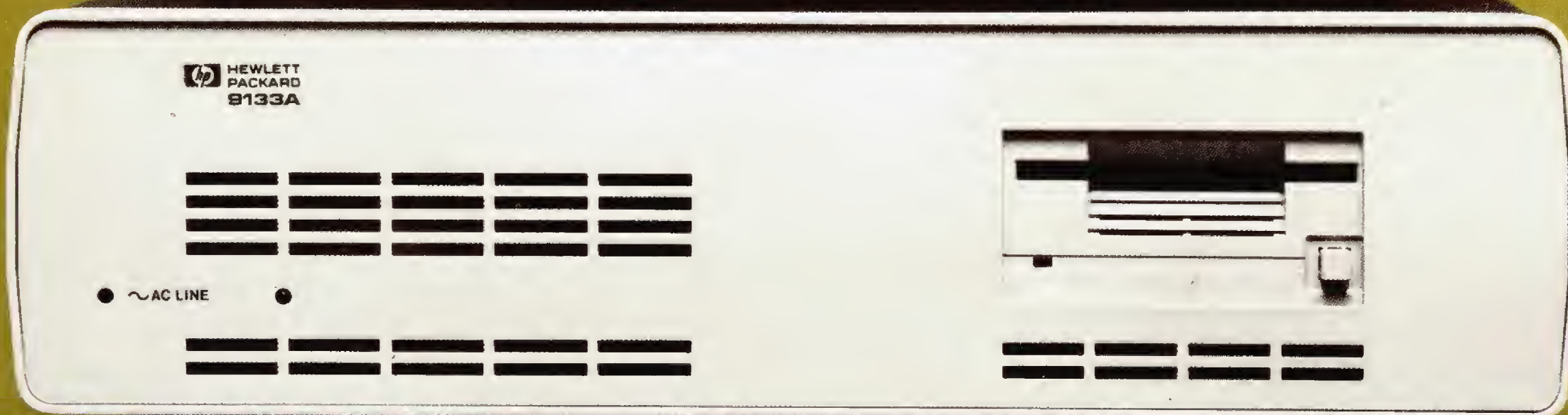
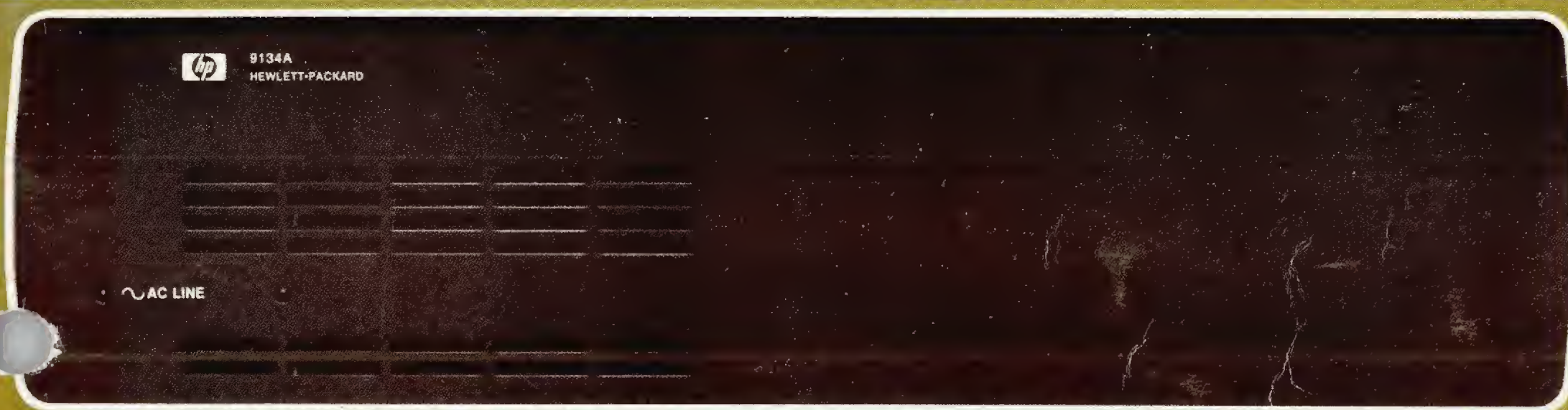
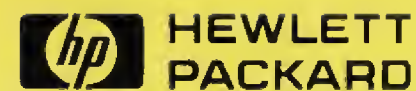


# HP 9133A/B, 9134A/B, and 9135A Disc Memory User's Manual





Federal Communications Commission  
Radio Frequency Interference Statement  
U.S.A. Only

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient the receiving antenna
- relocate the computer with respect to the receiver
- move the computer away from the receiver
- plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV  
Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4

Warranty Statement

Hewlett-Packard products are warranted against defects in materials and workmanship. For Hewlett-Packard Desktop Computer Division products sold in the U.S.A. and Canada, this warranty applies for ninety (90) days from date of delivery. \* Hewlett-Packard will, at its option, repair or replace equipment which proves to be defective during the warranty period.

ALL REPAIRS TO BE DONE UNDER WARRANTY MUST BE RETURNED TO HP.

Buyer shall prepay shipping charges for products returned to HP for warranty service and HP shall pay for return of the products to Buyer. However, Buyer shall pay for all shipping charges, duties and taxes for products returned to HP from another country.

Repairs necessitated by misused of the equipment, or by hardware, software, or interfacing not provided by Hewlett-Packard are not covered by this warranty.

NO OTHER WARRANTY IS EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. HEWLETT-PACKARD SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES.

\*For other countries, contact your local Sales and Service Office to determine warranty terms.

# **HP 9133A/B, 9134A/B, and 9135A Disc Memory User's Manual**



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# Chapter 1

## General Description

- Introduction
- Technical Specifications

### Introduction

The HP 9133A/B, 9134A/B, and 9135A disc memories (Figure 1-1) are random access data storage devices. The 9133A contains a 4.6 Mbyte, 5 1/4-inch Winchester disc drive and a 3 1/2-inch flexible disc drive. The 9134A contains a 4.6 Mbyte, 5 1/4-inch Winchester drive only, and the 9135A contains a 4.6 Mbyte, 5 1/4-inch Winchester drive and a 5 1/4-inch flexible disc drive.

The Winchester drive, found in the 9133A, 9134A and 9135A disc memories, has been designed to emulate an HP 9895A 8-inch flexible disc drive master with three slave drives (1.15 Mbytes per drive). The 3 1/2-inch flexible disc drive in the 9133A is a 9121S, and the 5 1/4-inch flexible disc drive in the 9135A is an 82902M. Thus, HP computers that support the 9895A, 9121S and 82902M flexible disc drives can operate the 9133A, 9134A, and 9135A.

A 10 Mbyte Winchester drive is installed in the 9133B and 9134B disc memory products. The 9133B contains the same 3 1/2-inch flexible disc drive as the 9133A. The 10 Mbyte Winchester drive is only available in the single volume version.

Option 010 on all three devices consists of a modification to the Winchester controller printed circuit assembly which causes the Winchester drive to appear as one large 4.8 Mbyte volume. The Winchester with option 010 responds to most of the commands used on the 9895A flexible disc drive.

Refer to the Helpful Hints section at the back of this Manual for additional information on using the disc memory with your mainframe. For more information, refer to your Mass Storage Manual for programming information for the HP 9121S, 82902M and 9895A flexible disc drives.



Figure 1-1. HP 9133A/B, HP 9134A/B, and HP 9135A Disc Memories



## Technical Specifications

Listed below are the physical, electrical, and environmental specifications for the HP 9133A/B, 9134A/B and 9135A disc memories.

### Unit Specifications

Power Requirements	9133A/B	9134A/B	9135A
Source (selected by rear panel switch)	100 Vac $\pm$ 10% 120 Vac $\pm$ 10% 220 Vac $\pm$ 10% 240 Vac $\pm$ 10%	100 Vac $\pm$ 10% 120 Vac $\pm$ 10% 220 Vac $\pm$ 10% 240 Vac $\pm$ 10%	100 Vac $\pm$ 10% 120 Vac $\pm$ 10% 220 Vac $\pm$ 10% 240 Vac $\pm$ 10%
Line Frequency ( $\pm$ 2%)	48-66 Hz	48-66 Hz	48-66 Hz
Power Consumption (max)	140W	140W	140W
<b>Environmental Range</b>			
Operating Temperature	10 to 40 C (50 to 140 F)	10 to 40 C (50 to 140 F)	10 to 40 C (50 to 140 F)
Storage Temperature	-40 to 60 C (-40 to 140 F)	-40 to 60 C (-40 to 140 F)	-40 to 60 C (-40 to 140 F)
Operating Humidity (non-condensing) 25.5 C max wet bulb temperature	20% to 80%	8% to 80%	20% to 80%
Storage Humidity (non-condensing)	5% to 95%	5% to 95%	5% to 95%
Operating Altitude	0 to 4572m 0 to 15000 ft	0 to 4572m 0 to 15000 ft	0 to 4572m 0 to 15000 ft
<b>Size/Weight</b>			
Height	130mm (5.1 in)	130mm (5.1 in)	130mm (5.1 in)
Width	424mm (16.7 in)	424mm (16.7 in)	424mm (16.7 in)
Depth	475mm (18.7 in)	475mm (18.7 in)	475mm (18.7 in)
Net Weight	14.5 kg (32 lbs)	13.4 kg (29.5 lbs)	15.5 kg (34.1 lbs)
Shipping Weight	17.6 kg (38.9 lbs)	16.8 kg (37 lbs)	18.6 kg (41 lbs)

### Drive Specifications

	3½" Flexible Disc	5¼" Flexible Discs	5 Mbyte Winchester	10 Mbyte Winchester
Technical	9133A/B	9135A	9134A,9135A 9133A/B	9133B,9134B
Formatted Capacity:			4.6M	9.68M
Bytes per Unit	270K	270K	4.8M (Opt. 010)	9.68M
Bytes per Sector	256	256	256	256
Sectors per Track	16	16	30 (31 for Opt. 010)	31
Tracks per Surface	66	33	150 (152 for Opt. 010)	305
Tracks per Inch	135/in	48/in	255/in	345
Recording Format	dbl density	dbl density	— — —	— — —
Max Sustained Transfer Rate*	17.8 kb/sec	6.8 kb/sec	50 kb/sec	50 kb/sec
Average Access Time	415 msec (on) 1415 msec (off)	187 msec (on) 435 msec (off)	168 msec**	90 msec
Rotational Speed	600 rpm	300 rpm	3600 rpm	3600 rpm
Media Part Number (10 pack)	HP 92191A	HP 92190A	— — —	— — —

\* Mainframe dependent

\*\* 60 msec within 1 volume

### NOTE

The flexible disc drives in the 9133A/B and 9135A disc memories are designed for operation in a typical office environment. Use of the equipment in an environment containing dust, dirt, or corrosive substances will cause the flexible disc drive and media life to be drastically reduced.



# Chapter 2

## Installation

- **Equipment Supplied**
- **Unpacking Your Disc Memory**
- **Configuring Power**
- **Interfacing the Disc Memory to Your System**

### Equipment Supplied

Please check to insure that you have received all of the standard equipment. If any items are incorrect or missing, please contact the dealer from whom you purchased the unit.

Description	Quantity	Voltage Range	HP Part Number
Power Cable	1		Dependent on location
Operator's Manual	1		09133-90000
Fuse	1	100 & 120Vac 2.5 Amp	2110-0083
	1	220 & 240Vac 1.5 Amp	2110-0043
Flexible Disc Media (with 9135A only)	1		9164-0128

A package of ten 3 1/2-inch discs can be ordered for your 9133A/B using the 92191A product number.

A package of ten 5 1/4-inch discs can be ordered for your 9135A using the 92190A product number.

### Unpacking Your Disc Memory

Your disc memory was carefully inspected before shipment. Remove the unit from the shipping carton and carefully inspect the unit for any physical damage that may have occurred during shipment. If you find any damage, you should immediately notify your dealer and file a claim with any carriers involved.

---

#### CAUTION

THE DISC MEMORY IS A PRECISION INSTRUMENT. MECHANICAL SHOCK CAN MISALIGN THE READ/WRITE HEADS, RESULTING IN READ ERRORS AND/OR DAMAGED DISCS WHETHER THE DISC IS OPERATING OR NOT.

---

If the disc memory is moved, be careful when picking it up and setting it down.

Carefully repack the disc memory in the original shipping carton before transporting it to another site.

---

**CAUTION**

EVIDENCE OF EXCESSIVE MECHANICAL SHOCK WILL VOID  
THE WARRANTY.

---

## Configuring Power

The following information should be used to configure your disc memory device power for proper operation in your area.

### Setting the Line Voltage Select Switches

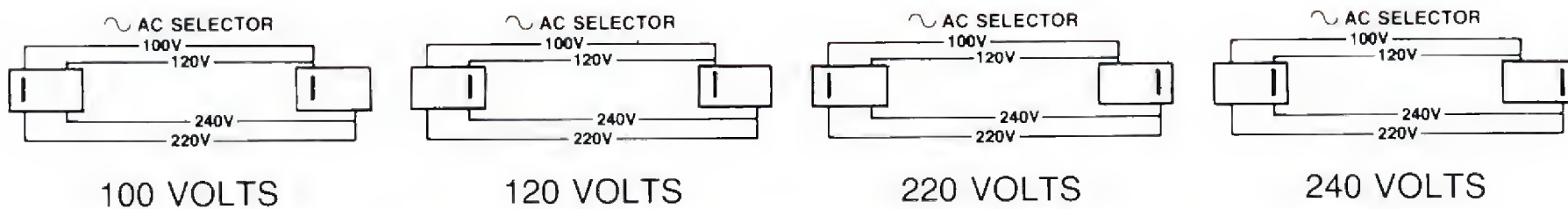
The voltage select switches on the rear panel must be set to the nominal line voltage for the area in which it is operating. Figure 2-1 shows the setting of the voltage select switches for the various line voltages.

---

**CAUTION**

ALWAYS TURN OFF THE AC POWER SWITCH BEFORE  
CHANGING THE VOLTAGE SELECT SWITCHES.

---



**Figure 2-1. Line Voltage Select Switches**

### Fuses

A different fuse is required for each of the two voltage ranges of 110-120 and 220-240 Vac. Table 2-1 gives the correct fuse ratings and fuse part numbers.

**Table 2-1. Fuses**

Voltage Range	Fuse Rating	HP Part Number
100 & 120Vac	2.5V 250 Vac Normal Blow	2110-0083
220 & 240Vac	1.5V 250 VAC Normal Blow	2110-0043

---

**WARNING**

ALWAYS DISCONNECT THE DISC MEMORY FROM THE  
AC SOURCE BEFORE CHANGING FUSES.

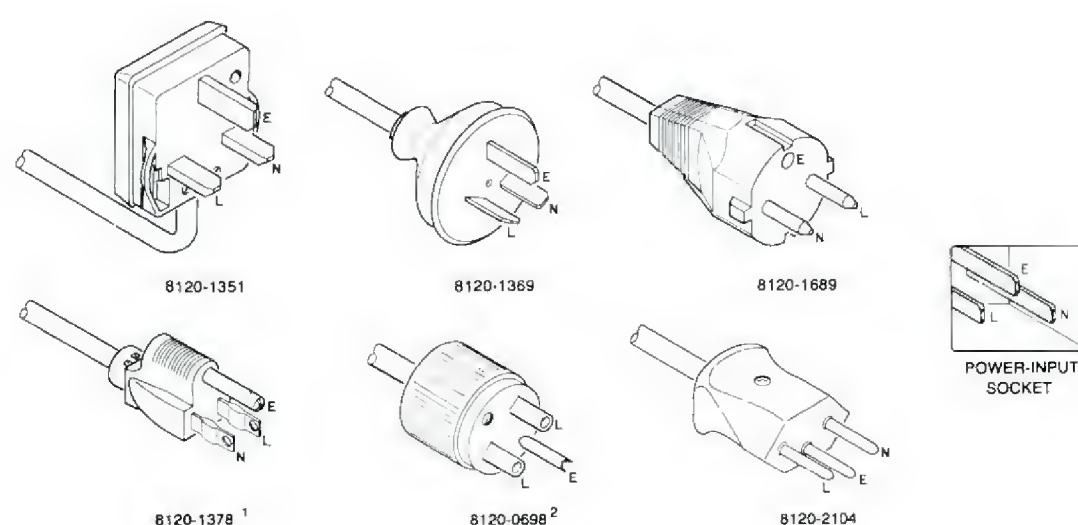
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## Power Cords

Power cords supplied by HP have polarities matched to the power input socket on the equipment (Figure 2-2).

- \* L = Line or active conductor (also called "live" or "hot")
- \* N = Neutral or identified conductor
- \* E = Earth or safety ground



<sup>1</sup>UL and CSA approved for use in the United States of America and Canada with equipment set for either 100 or 120 Vac operation.

<sup>2</sup>UL and CSA approved for use in the United States of America and Canada with equipment set for either 200 or 240 Vac operation.

**Figure 2-2. Available Power Cords**

### WARNING

IF IT IS NECESSARY TO REPLACE THE POWER CORD, THE REPLACEMENT CORD MUST HAVE THE SAME POLARITY AS THE ORIGINAL. OTHERWISE, A SAFETY HAZARD MIGHT EXIST IF AN INTERNAL FAILURE OCCURS.

The cord packaged with the equipment depends upon where the equipment is to be delivered.

## Interfacing the Disc Memory to Your System

The disc memory is connected to the computer via the Hewlett-Packard Interface Bus (HP-IB). The device address switches are set prior to connecting the interface cable.

### Selecting the Device Address

Each device in an HP-IB system must be set to a unique device address. The 9134A/B disc memory contains one device, and the 9133A/B and 9135A disc memories contain two devices. A device address switch is provided for each device. See Figure 2-3 for switch locations.

Prior to setting the device address switches, turn the disc memory ~AC line switches OFF.

The switches can be set to any one of eight device addresses, ranging from decimal 0 through 7. Refer to Figure 2-3 to set these switches to the desired device address.

Switch Segments

Address	X	4	2	1	
0	X	UP	UP	UP	(Factory setting for Winchester)
1	X	UP	UP	DOWN	
2	X	UP	DOWN	UP	(Factory setting for flexible disc)
3	X	UP	DOWN	DOWN	
4	X	DOWN	UP	UP	
5	X	DOWN	UP	DOWN	
6	X	DOWN	DOWN	UP	
7	X	DOWN	DOWN	DOWN	

X = Not used

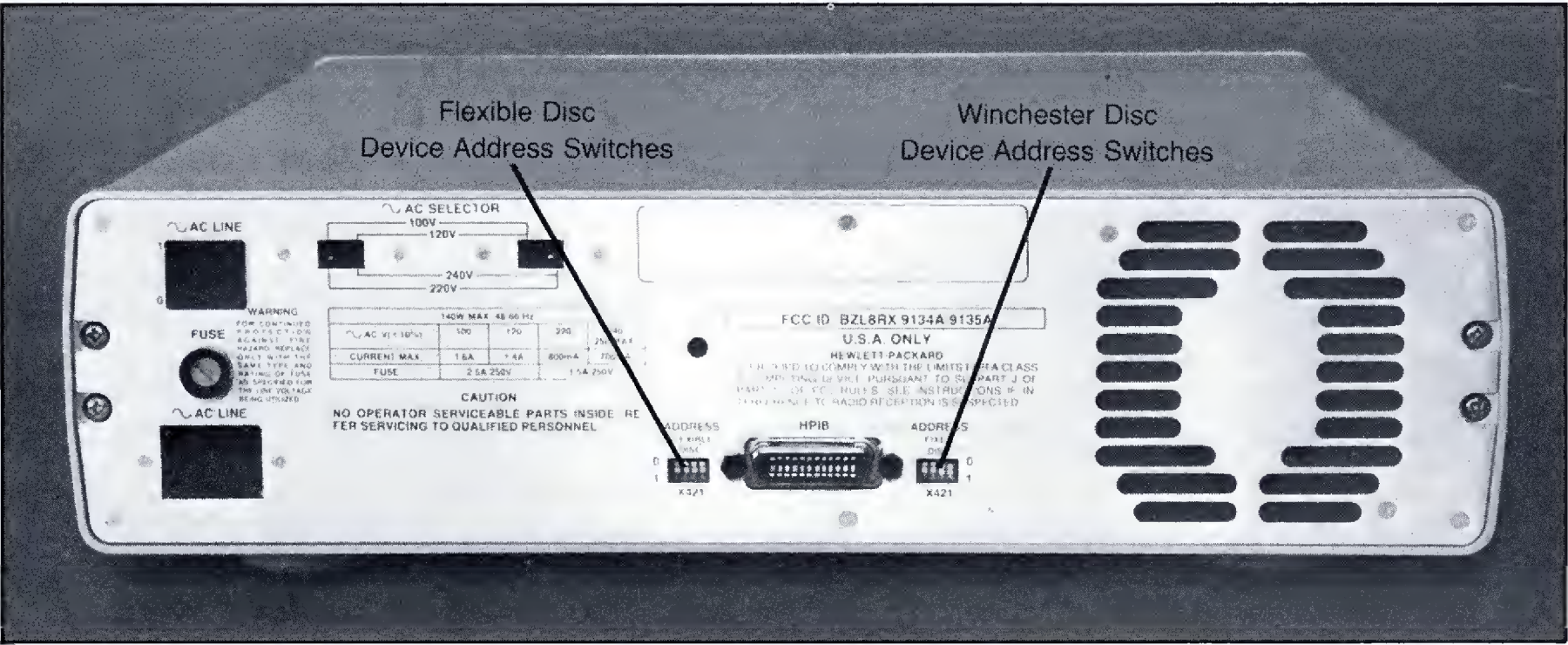
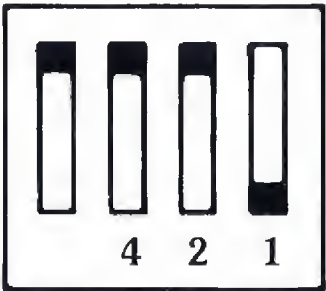


Figure 2-3. Device Address Switch Setting

CAUTION

ALWAYS SET THE AC LINE SWITCHES TO "OFF" (0) FOR THE COMPUTER AND THE DISC DRIVES WHEN INSERTING OR REMOVING THE INTERFACE CABLES. USE ONLY CABLES DESIGNED BY HEWLETT-PACKARD SPECIFICALLY FOR YOUR EQUIPMENT. FAILURE TO DO SO COULD DAMAGE THE DISC DRIVE OR THE CONTROLLING COMPUTER.

Refer to Figure 2-4 for a list of the HP-IB interface cables used with HP computers.



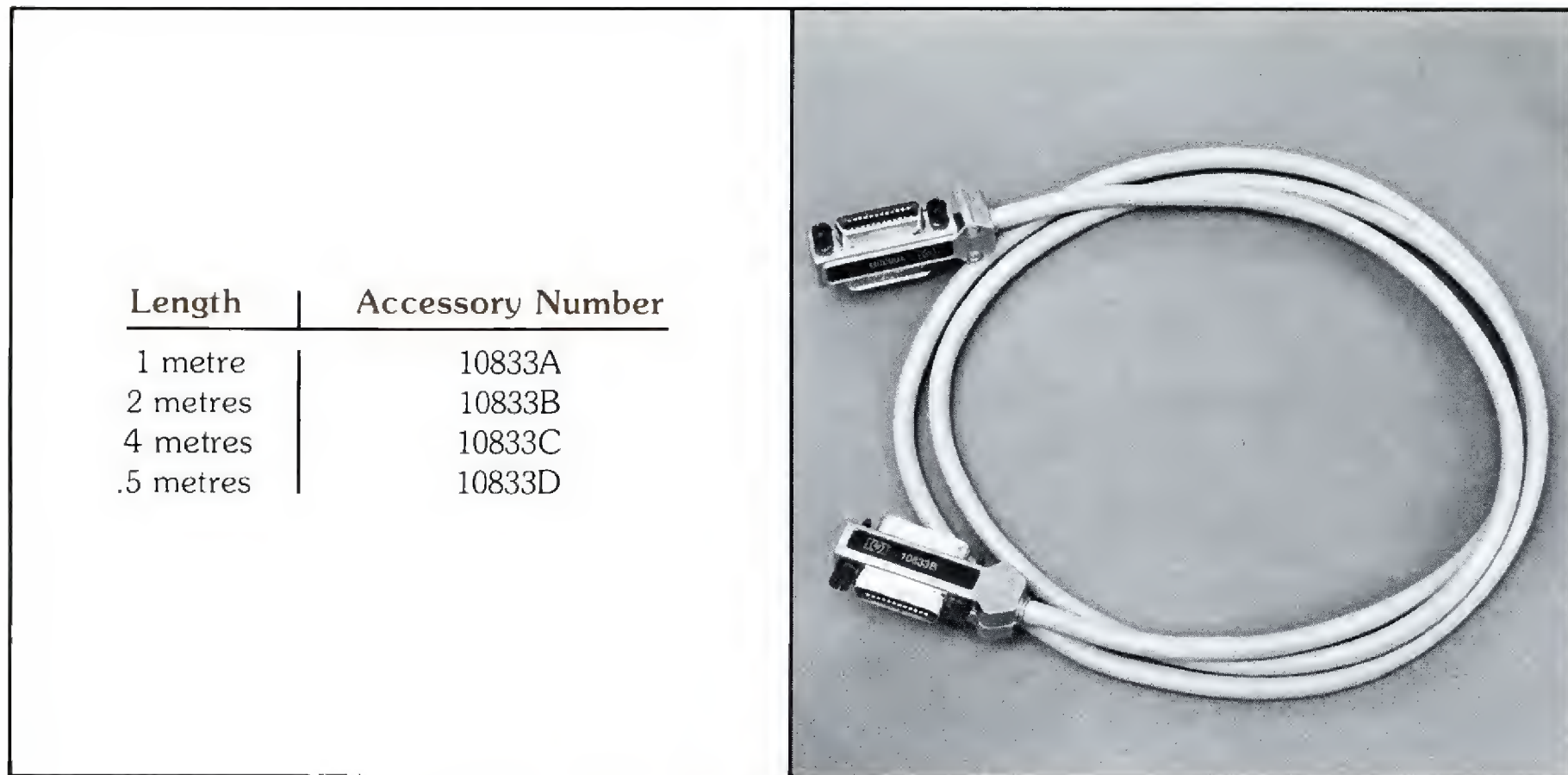


Figure 2-4. HP-IB Interface Cables

### HP-IB Interface Restrictions

1. All the ~AC line switches must be turned "OFF" when connecting (and disconnecting) devices to your system.
2. The total length of cable permitted in one bus system must be less than or equal to two metres times the number of devices connected together (the interface card is counted as one device).
3. The total length of the cable must not exceed 20 metres. For example, a system containing six devices can be connected together with cables that have a total length less than or equal to 12 metres (six devices  $\times$  2m/device = 12 metres). The individual lengths of cable can be distributed in any manner desired as long as the total length does not exceed the allowed maximum. If more than 10 devices are to be connected together, cables shorter than two metres must be used between some of the devices to keep the total cable length less than 20 metres.
4. The maximum number of devices that can be connected together in one bus system is 15. There are no restrictions to the way cables may be connected together; however, it is recommended that no more than four piggyback connectors be stacked together on one device. The resulting structure could exert enough force on the connector mounting to damage it.

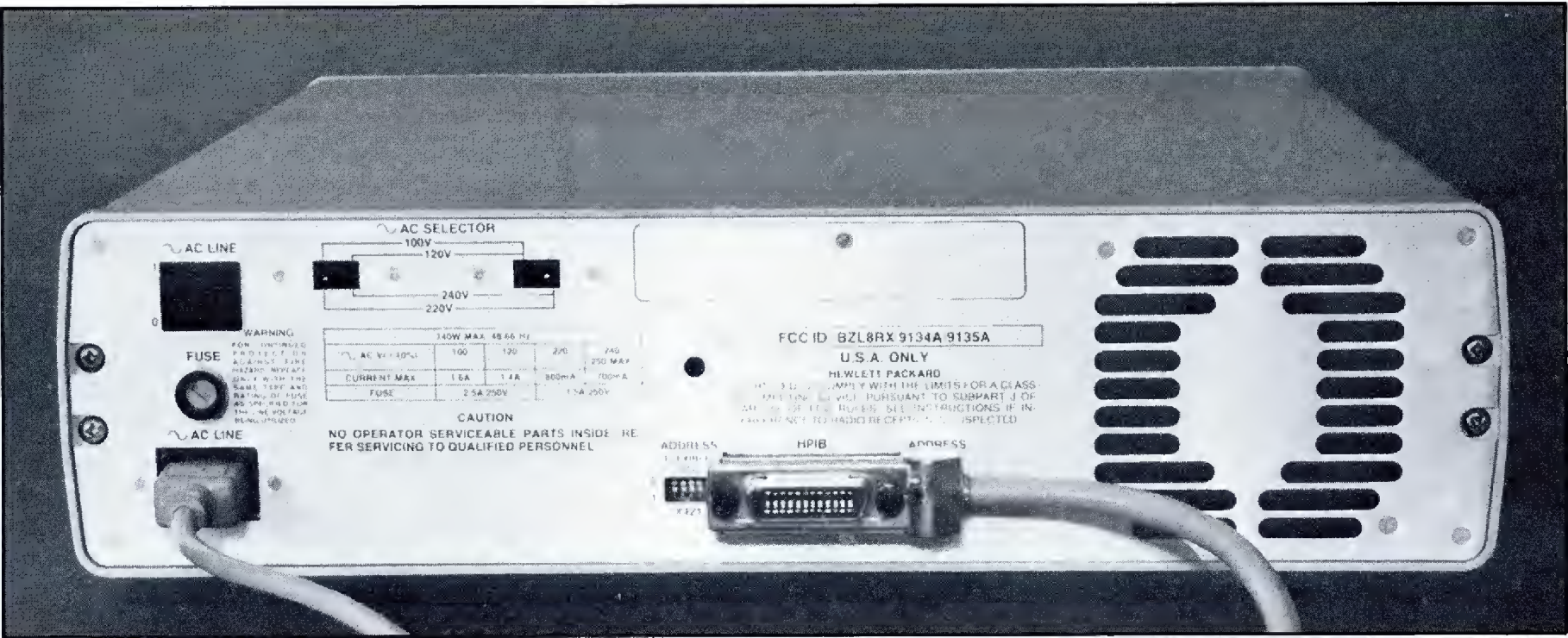


Figure 2-5. Interface Connection



# Chapter 3

## Basic Operation

### HP 9133A/B Basic Operation

- 3 1/2-inch Flexible Disc Usage and Handling
- 3 1/2-inch Flexible Disc Description and Write Protection
- Inserting and Removing the 3 1/2-inch Flexible Disc
- Media Wear Indication
- 9133A/B Controls and Indicators
- Applying Power to the 9133A/B
- Selftest Procedures

### HP 9134A/B Basic Operation

- 9134A/B Controls and Indicators
- Applying Power to the 9134A/B

### HP 9135A Basic Operation

- 5 1/4-inch Flexible Disc Usage and Handling
- 5 1/4-inch Flexible Disc Write Protection
- Inserting and Removing the 5 1/4-inch Flexible Disc
- Controls and Indicators
- Applying Power to the 9135A

## HP 9133A/B Basic Operation

3 1/2-inch Flexible Disc Usage and Handling  
 3 1/2-inch Flexible Disc Description and Write Protection  
 Inserting and Removing the 3 1/2-inch Flexible Disc  
 Media Wear Indication  
 9133A/B Controls and Indicators  
 Applying Power to the 9133A/B  
 Selftest Procedures

---

### CAUTION

KEEP THE FRONT AND BACK OF THE DISC MEMORY FREE FROM OBSTRUCTIONS TO AVOID RESTRICTING THE AIR FLOW. FAILURE TO DO SO COULD CAUSE THE UNIT TO OVERHEAT AND RESULT IN DAMAGE TO THE DISC MEMORY.

---

## 3 1/2-inch Flexible Disc Usage and Handling

### Flexible Disc Media

The removable storage medium used in the HP 9133A/B is a flexible mylar disc coated with a thin layer of magnetic oxide. The disc is enclosed in a protective plastic jacket with a slot for head access to the recording surface. Only the lower side of the flexible disc is used for data storage. The lower side refers to the lower side of the disc as it resides in the drive.

Each flexible disc must be initialized before it can be used for data storage. The initialization procedure marks each disc sector, checks for defective tracks, and establishes file directories.

Refer to your computer programming or mass storage manual for the correct initialization procedure.

---

### CAUTION

DISC DRIVE PERFORMANCE AND RELIABILITY ARE DEPENDENT ON THE TYPE OF MEDIA USED. DISC DRIVE SPECIFICATIONS CAN BE ASSURED ONLY WHEN USING HP MEDIA. THE USE OF IMPROPER MEDIA CAN RESULT IN PREMATURE DISC FAILURE OR DAMAGE TO THE DISC DRIVE.

ON SOME DISC PRODUCTS HP MAY QUALIFY OTHER NON-HP MEDIA. WHEN TESTED, THIS MEDIA MET HP SPECIFICATIONS. HOWEVER, HP DOES NOT WARRANT OR SUPPORT THIS MEDIA AND CANNOT CONTROL CHANGES IN ITS SPECIFICATIONS OR QUALITY. THE SELECTION AND USE OF SUCH PRODUCTS IS THE CUSTOMER'S RESPONSIBILITY. HP RESERVED THE RIGHT TO EXCLUDE FROM WARRANTY AND MAINTENANCE AGREEMENT COVERAGE ANY REPAIRS WHICH HP REASONABLY DETERMINES OR BELIEVES WERE CAUSED BY THE USE OF MEDIA NOT DISTRIBUTED BY HP. HP WILL UPON REQUEST PROVIDE SUCH REPAIRS ON A TIME AND MATERIAL BASIS.

---



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WARRANTY AND MAINTENANCE AGREEMENT COVERAGE  
OF REPAIRS NOT CAUSED BY THE USE OF NON-HP MEDIA IS  
UNAFFECTED.

---

## Operating Cleanliness

The read/write head must maintain contact with the disc during read and write operations. Figure 3-1 shows various types of contaminants and their size relationships. A contaminant particle hard enough and of the right size may scratch the media oxide coating or the head surface. Even if not hard enough to scratch, it may be large enough to lift the head from the surface, causing data errors or damage to the media.

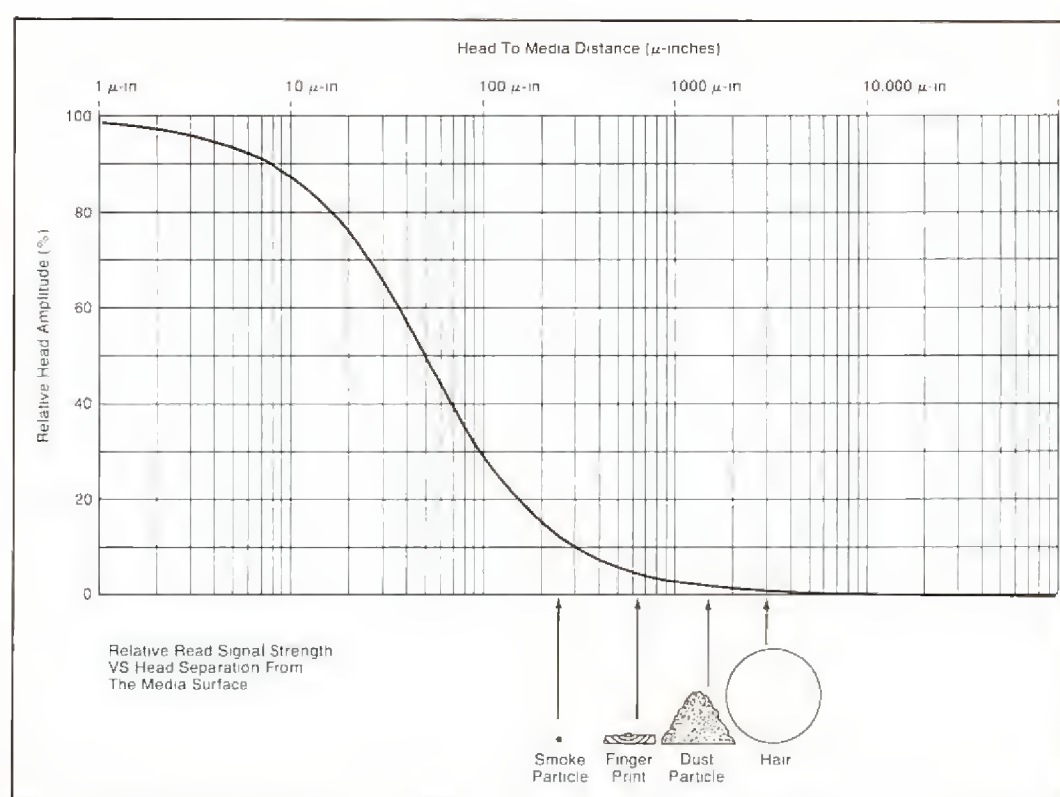


Figure 3-1. 3 1/2-inch Flexible Disc Head/Media Contaminants

## Handling Flexible Disc Media

The flexible disc is basically maintenance free, but it is delicate and **MUST BE HANDLED CAREFULLY**. Remember, the disc contains your valuable data and programs, and should be treated accordingly. A good rule of thumb is to treat your disc as you would a valuable record album. Here are some specific Do's and Don'ts to avoid loss of data or damage to your discs.

**EVEN A LITTLE CARELESSNESS IN DISC HANDLING CAN DRAMATICALLY REDUCE THE LIFE OF THE DISC.**

## Do

### Back Up Discs Frequently

There is always a chance of losing data when mass storage devices are accessed. There are many causes in any computer system—a programming bug, operator error, power failure,

or hardware failure. In the case of flexible discs, media failure from contamination or wearout is possible. **YOUR BEST PROTECTION AGAINST DATA LOSS IS FREQUENT BACKUP OF YOUR FILES.**

#### **Slide The Disc Guard Over The Head Window When Not In Use**



This is the single most important thing to remember about handling your disc because it prolongs disc life by protecting it from dust and scratches. **NEVER ATTEMPT TO BLOW DUST FROM THE DISC SURFACE.** Between uses discs should be stored upright in a dust-free container. The box in which the discs are shipped, or a similar container, is a good choice.

#### **Operate Your System In A Clean Environment**



Airborne contaminants and particles accidentally dropped onto the disc will cause your disc to wear out prematurely and may cause unreliable data storage and retrieval operations. Some of the most common contaminants are **DUST, SMOKE, ASHES, ERASER CRUMBS, and BREADCRUMBS.** Chemical vapors may also cause premature wear-out. **NEVER ATTEMPT TO BLOW SMALL PARTICLES FROM THE DISC SURFACE.**

#### **Maintain Proper Temperature And Humidity**



The proper operating range is 10°C (50°F) to 40°C (104°F) and 20% to 80% relative humidity. While temperature is usually easy to control, it may be necessary to make special provisions to keep the humidity in the proper range. Although the disc will continue to operate outside the normal humidity range, it will wear out more quickly and will have a higher error rate.

#### **Avoid Magnetic Fields**



The data is stored on the disc magnetically and can be erased by an external magnetic field. Avoid placing a disc near power transformers, magnets or large disc memories or motors.

#### **Remove From Drive When Not In Use**



Remove the disc completely from the drive when access is not needed for an extended period of time.



### Use A Felt Tip Pen To Label Your Disc



Use a soft felt tip pen to label your disc, and be careful to write only in the label area.

### Replace Discs Frequently

Although discs are designed to provide many hours of useful life, they will eventually wear out. The life of a disc is VERY dependent on how carefully it is handled and how much it is used.

The following guidelines refer to head/media contact time or the time the disc access light on the front panel is lit. The terms used here (normally and heavily) also refer to the head load pad replacement requirements in the Maintenance section of Chapter 4. A disc used normally (disc access light is lit less than 20 minutes a day) should last half a year. A disc that is used heavily (disc access light lit more than 2 hours a day) should not be expected to last more than 2 months. Discs should be replaced whenever they begin to show signs of circular marring. See the following section titled "Media Wear Indication."

### Don't

#### Do Not Touch The Surface Of The Disc



The thickness of a fingerprint is enough to lift the head off the disc and cause errors. The oils in a fingerprint will also collect dust which can cause a disc to wear out sooner than normal.

#### Do Not Bend Or Fold The Disc



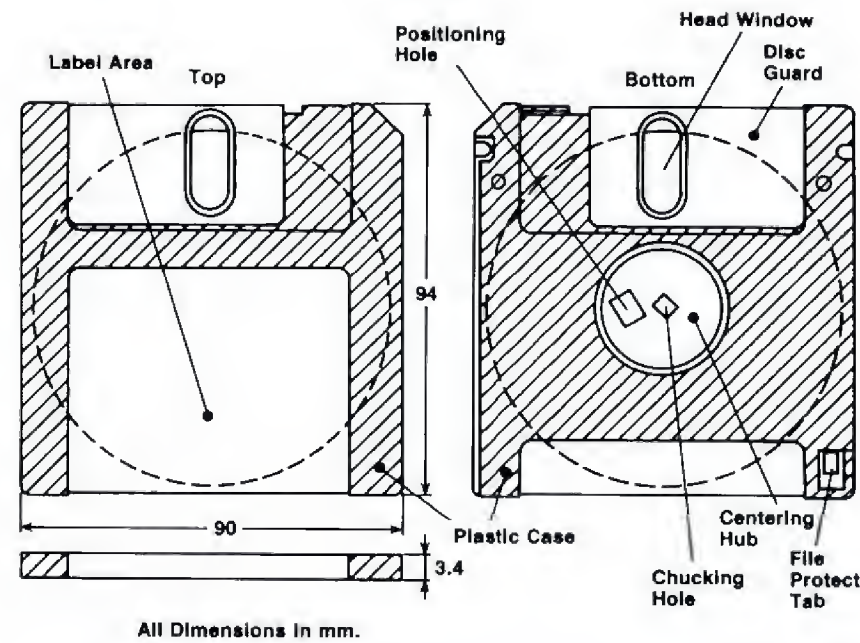
The disc is flexible but will not operate if it is creased. Using ball point pens, rubber bands, paper clips, etc. can crease the disc.

#### Do Not Try To Clean A Disc

The inside surface of the disc jacket is covered with a special material that cleans the disc as it rotates. Any other method of cleaning may cause solvent damage to the media or scratch the disc, causing loss of data. If a disc becomes dirty or scratched, immediately transfer the data to a new disc and dispose of the old disc.

## 3 1/2-inch Flexible Disc Description and Write Protection

The 3 1/2-inch flexible disc is enclosed in a rigid plastic shell for extra protection and reduced disc-to-case friction (see Figure 3-2). A metal centering hub ensures rapid and accurate positioning when the disc is inserted in the drive. The disc guard which slides back and forth across the front of the disc protects the recording surface from foreign object contamination.

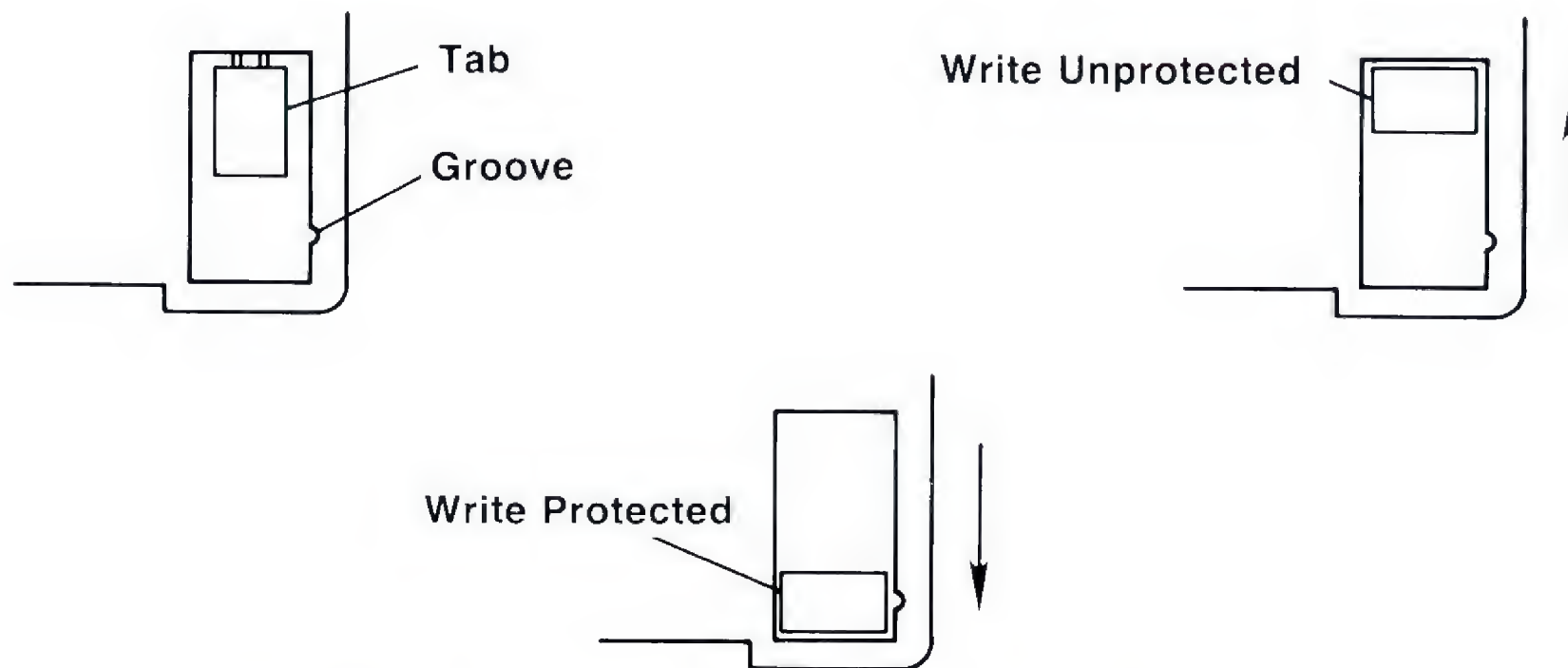


**Figure 3-2. The 3 1/2-inch Flexible Disc**

The micro-flexible disc is write unprotected when you receive it. To prepare the disc for write protected operation, do the following (see Figure 3-3):

1. Break off the write protect tab.
2. Align the protrusion on the tab with the slot in the disc
3. Depress the tab into the groove – tab should fit snugly.

Write protection is accomplished by sliding the tab away from the center of the disc.



**Figure 3-3. 3 1/2-inch Flexible Disc Write Protection**

## **Inserting and Removing the 3 1/2-inch Flexible Disc**

1. The disc can be inserted into the drive with or without power applied.
2. Slide the disc guard away from the head window exposing the disc surface. Insert the exposed head window first with the metal centering hub down. Carefully slide the disc into the drive until you feel it contact the rear of the drive.



Continue pressing the disc until it is pulled down into the drive.

3. Remove the disc by depressing the disc eject button and pulling the disc straight out. Always slide the disc guard over the head window immediately after removing the disc from the drive.

Refer to Figure 3-4 for proper insertion of the flexible disc.



**Figure 3-4. 3 1/2-inch Flexible Disc Insertion**

---

#### **NOTE**

There is no write protect capability on the Winchester drive. Caution must be used to avoid writing over data stored on the Winchester disc.

---

### **Media Wear Indication**

As the flexible disc becomes worn, the friction between the disc and the read/write head increases. Because the same read/write head accesses the data from all your discs, it is very important that this friction be kept to a minimum level. To insure the long wear life of the read/write head, you should make the following check each time you insert a disc into your drive.

Checking for wear is a simple visual inspection of the disc surface before you insert the disc into the drive. When viewing the disc surface you should look for any signs of circular marring. This is done by sliding open the disc guard revealing the disc surface. If you see any sign of circular marring on either side of the exposed surface, the disc should be immediately copied and discarded. Circular marring generally occurs first on the upper (label side) surface of the disc. This may indicate load pad wear.



Compare a new (never used) disc to a disc you have used for a few hours. There should be no visible difference.

An internal test has been implemented and provides you with an upper limit indication for disc use. When a disc reaches a finite limit, the head loaded indicator (disc access light) blinks on and off. This indication is continued until you remove the disc or until the host sends a command to the drive. The drive accepts and performs the command from the host, after which it resumes the disc "worn out" indication. At this time the data on the disc should be copied to a new disc and the old disc discarded. Continued use of the old disc after the initial wear indication will result in eventual automatic write protection of the disc by the drive controller.

Viewing the disc in the above manner prior to inserting the disc into the drive and taking the appropriate action when you receive the wearout indication will insure the long life of the read/write head.

## 9133A/B Controls and Indicators

The indicators are located on the front panel. The indicators, as shown in Figure 3-5, are a disc access light for the Winchester drive and the head load indicator for the 3 1/2-inch flexible disc drive. The Winchester drive access light is illuminated whenever the disc is accessed for data storage or retrieval and momentarily when the drive is powered-up. The flexible disc drive access light lights up whenever the head is loaded or when the drive is selected.

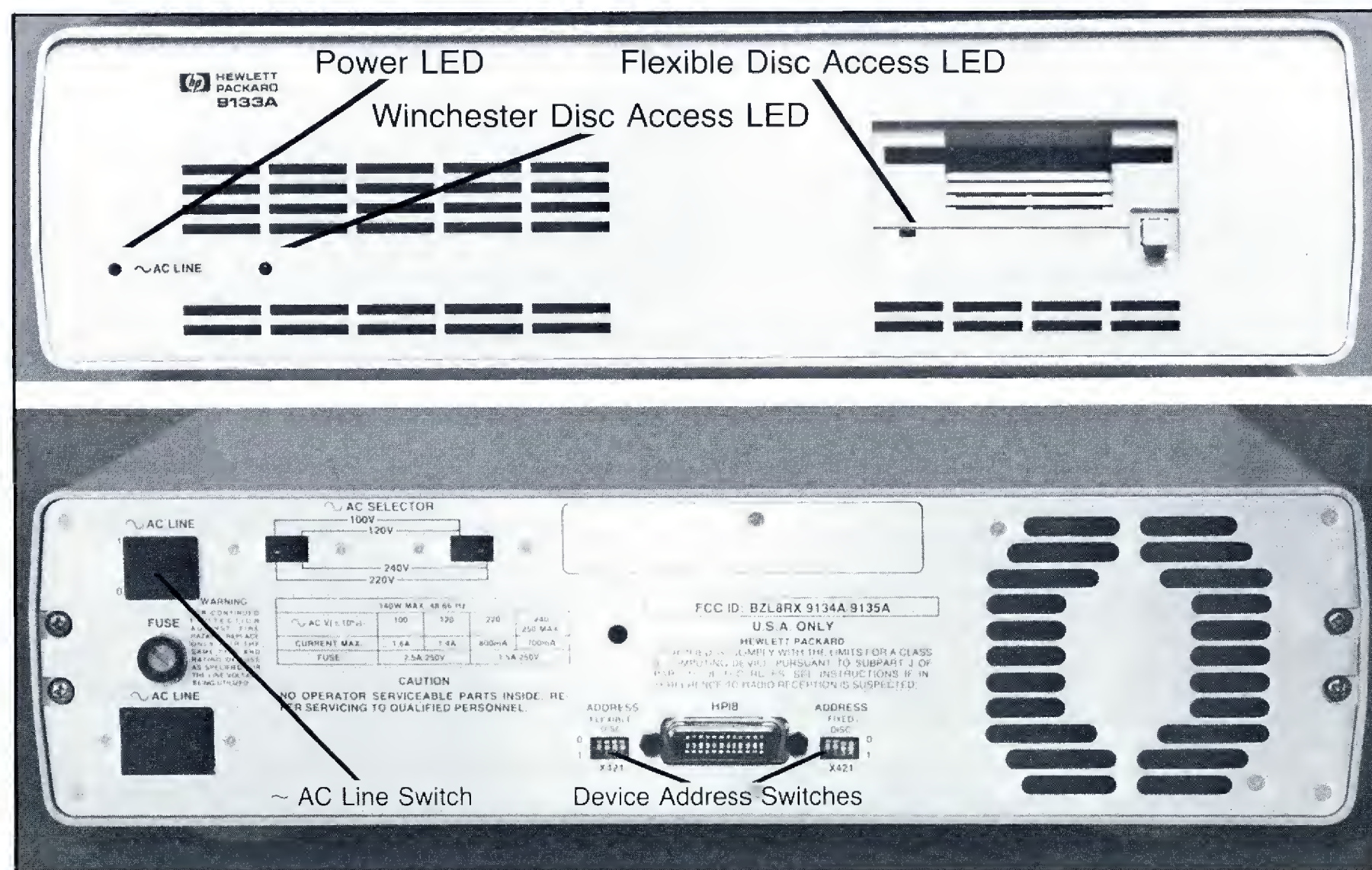


Figure 3-5. 9133A/B Controls and Indicators



---

**CAUTION**

THE FLEXIBLE DISC ACCESS LIGHT ON THE FRONT OF THE DRIVE INDICATES USAGE OF THAT DRIVE. DO NOT DEPRESS THE DISC EJECT BUTTON WHEN THE ACTIVITY LIGHT IS ON.

---

## **Applying Power to the 9133A/B**

Before turning the disc memory power on, be sure to perform all the procedures in Chapter 2.

Locate the AC line switch on the rear panel and set it to the "ON" or "1" position. The disc drive requires about 20 seconds after the application of power before it is ready for operation. See the section titled "Selftest" in this chapter for the power-on selftest indication.

### **3 1/2-inch Flexible Disc Structure**

The surface of the flexible disc is coated with ferromagnetic iron oxide. Data is stored in the form of binary digits represented by magnetic flux reversals on the disc. Information is stored and retrieved by the disc unit's head which comes in contact with the disc's lower surface.

Information is stored in 70 concentric tracks on the lower side of the disc. The tracks are numbered 0 through 69. Each track is divided into 16 physical records (sectors), numbered 0 through 15. Each record contains 256 bytes (characters) of information. There is an important difference between a physical record and a logical record. A physical record is the smallest accessible unit of data on the disc. It is always the same size (256 bytes). A logical record is one that you define when you create a data file. Data files are variable and depend on the type and quantity of data you are storing.

Some of the space on each disc is reserved for the directory. The space reserved depends on the controlling computer and the number of records in the file directory.

### **Data Errors**

Two error conditions cause the selftest indicator to come on and stay on until the condition disappears. These conditions are a command sequence-error over the HP-IB (from the host controller) and a data error from the disc. Whenever these conditions occur it is best to retry the last operation. If a retry is successful, the error and error indication are cleared. If the condition remains after several retries, contact your dealer or sales office for assistance.

### **Selftest**

There are three selftest modes on the flexible disc within the 9133A/B: power-on, remote, and service selftests. The service selftests are not included in this document.

The self test light is visible through a hole in the rear of the 9133A/B. See Figure 3-5 for the location of this light.

The power-on test exercises the RAM and the flexible disc controller chip (FDC). Power-on also calculates a checksum for the ROM. If the RAM or ROM tests fail, the processor goes no further, waiting for service. If the 9133A/B passes the RAM and ROM tests, but fails the FDC

test, the flexible disc controller processor continues to initialize the system and allows the host to talk to it, if possible. If all the power-on selftests are passed, the self test light flashes five times to indicate a successful power-on condition.

The remote selftest is initiated by the host with the proper HP-IB passed command. Results of the test are available over the HP-IB with this test. See the INITIATE SELFTEST command description in the Service Manual for more details. If the drive contains a disc that is not write protected, the following tests are performed: RAM, ROM, FDC, motor speed, format, and read verify test is executed. The RAM test reads and writes checkerboard patterns into the RAM. The ROM test calculates a checksum for the ROM and compares that to a precalculated value. The FDC test reads and writes to selected registers on the chip. The motor speed test measures the index period and compares it to the drive specification. The format test formats the discs in the drive. No testing of the interface to the host occurs.

---

### **WARNING**

**ALL DATA ON THE DISC IS DESTROYED AND IS  
UNRECOVERABLE WHEN PERFORMING THE REMOTE  
SELFTEST.**

---

The read test verifies the written data and the error checking of this data on the discs. If all the other tests are passed successfully, the self test light flashes ten times. If any test fails, no flashing occurs.

If the disc inserted into the drive is write protected, the format test is skipped. If all the other tests are passed successfully, the self test light flashes ten times. If no disc is inserted into the drive, then motor speed, format, and read tests are skipped. If the other tests are passed, the self test light flashes ten times.

After the remote selftest, the drive is reset and the flexible disc drive appears, to the host, to have just been powered-on.



## HP 9134A/B Basic Operation

9134A/B Controls and Indicators  
Applying Power to the 9134A/B

### NOTE

There is no write protect capability on the Winchester drive. Caution must be used to avoid writing over data stored on the Winchester disc.

### CAUTION

KEEP THE FRONT AND BACK OF THE UNIT FREE FROM OBSTRUCTIONS TO AVOID RESTRICTING THE AIR FLOW. FAILURE TO DO SO COULD CAUSE THE UNIT TO OVERHEAT AND RESULT IN DAMAGE TO THE DISC MEMORY.

## HP 9134A/B Controls and Indicators

The indicators are located on the front panel. The indicators, as shown in Figure 3-6, are the power-on light, and the Winchester disc drive access light. The disc access light is illuminated whenever the disc is accessed for data storage or retrieval.

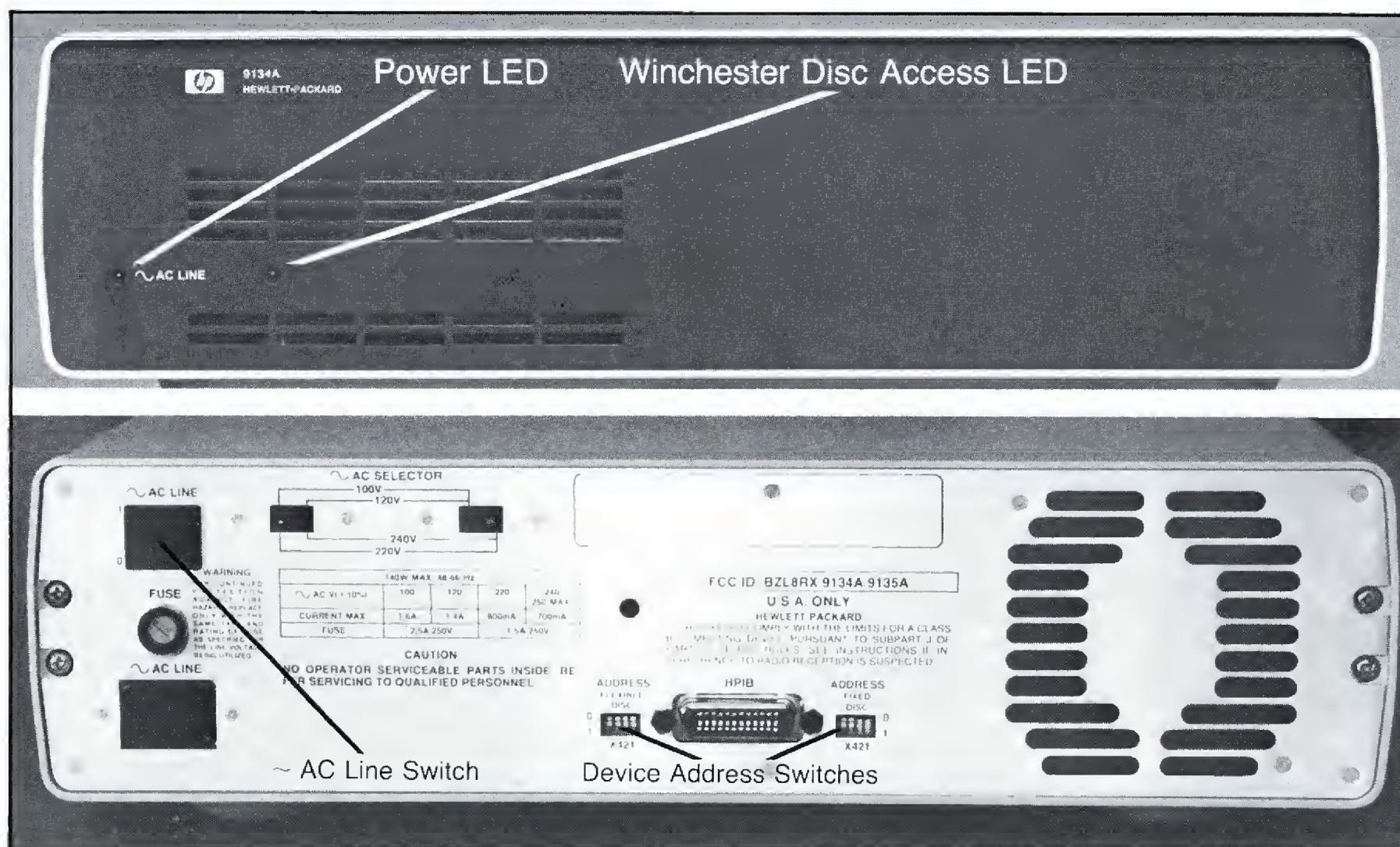


Figure 3-6. 9134A/B Controls and Indicators

## **Applying Power to the 9134A/B**

Before turning the disc memory on, be sure to perform all the procedures in Chapter 2. Locate the ~AC line switch on the rear panel and set it to the "ON" or "1" position. The Winchester disc drive requires about 20 seconds after the application of power before it is ready for operation.



## HP 9135A Basic Operation

5 1/4-inch Flexible Disc Usage and Handling  
 5 1/4-inch Write Protection  
 Inserting and Removing the 5 1/4-inch Flexible Disc  
 9135A Controls and Indicators  
 Applying Power to the 9135A

---

### CAUTION

KEEP THE FRONT AND BACK OF THE UNIT FREE FROM OBSTRUCTIONS TO AVOID RESTRICTING THE AIR FLOW. FAILURE TO DO SO COULD CAUSE THE UNIT TO OVERHEAT AND RESULT IN DAMAGE TO THE DISC MEMORY.

---

## 5 1/4-inch Flexible Disc Usage and Handling

### Flexible Disc Media

The removable storage medium used in the HP 9135A is a flexible mylar disc coated with a thin layer of ferromagnetic oxide. The disc is enclosed in a protective plastic jacket with a slot for head access.

Up to 270 Kbytes of data can be stored on each disc. Since some storage is used for a directory, the exact amount available for user storage depends upon the controller and the number of files stored. Refer to the appropriate mainframe mass storage programming or reference manual for details.

Each flexible disc must be initialized before it can be used for data storage. The initialization procedure marks each disc sector, checks for defective tracks, and may establish file directories. Refer to the mainframe programming or reference manual for the correct initialization procedure.

---

### CAUTION

DISC DRIVE PERFORMANCE AND RELIABILITY ARE DEPENDENT ON THE TYPE OF MEDIA USED. DISC DRIVE SPECIFICATIONS CAN BE ASSURED ONLY WHEN USING HP MEDIA. THE USE OF IMPROPER MEDIA CAN RESULT IN PREMATURE DISC FAILURE OR DAMAGE TO THE DISC DRIVE.

ON SOME DISC PRODUCTS HP MAY QUALIFY OTHER NON-HP MEDIA. WHEN TESTED, THIS MEDIA MET HP SPECIFICATIONS. HOWEVER, HP DOES NOT WARRANT OR SUPPORT THIS MEDIA AND CANNOT CONTROL CHANGES IN ITS SPECIFICATIONS OR QUALITY. THE SELECTION AND USE OF SUCH PRODUCTS IS THE CUSTOMER'S RESPONSIBILITY. HP RESERVED THE RIGHT TO EXCLUDE FROM WARRANTY AND MAINTENANCE AGREEMENT COVERAGE ANY REPAIRS WHICH HP REASONABLY DETERMINES OR BELIEVES WERE CAUSED BY THE USE OF MEDIA NOT PROVIDED BY HP. HP WILL UPON REQUEST PROVIDE SUCH REPAIRS ON A TIME AND MATERIAL BASIS.

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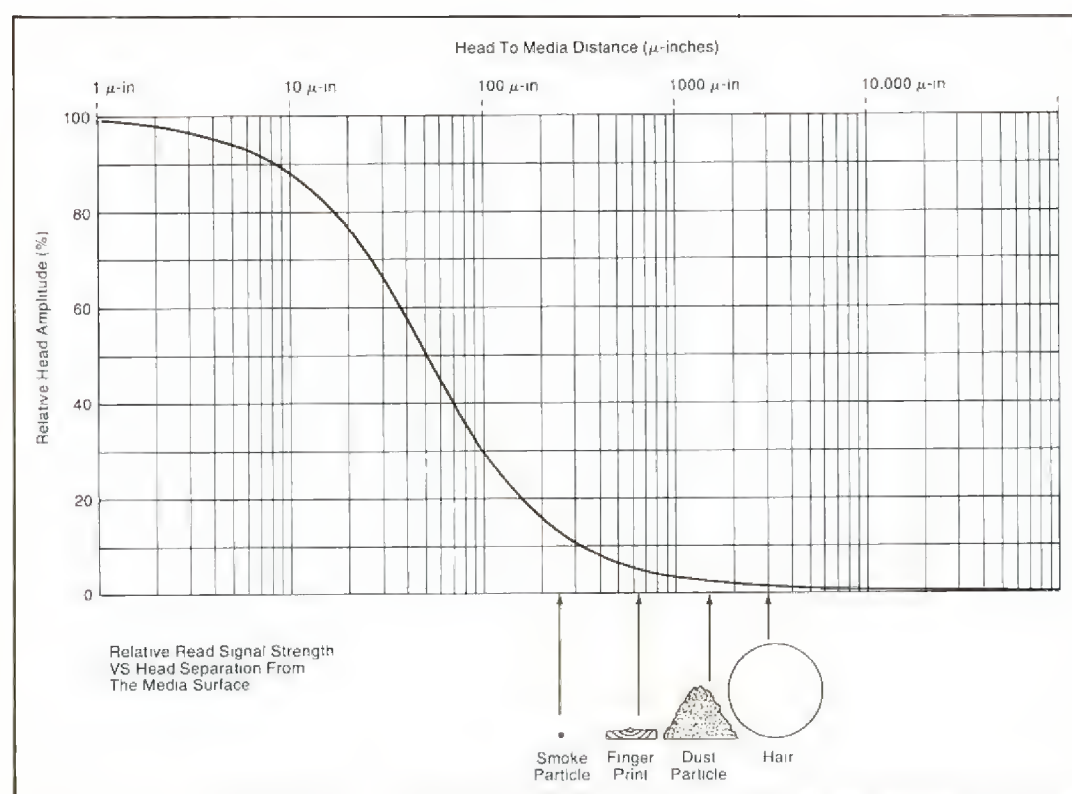
WARRANTY AND MAINTENANCE AGREEMENT COVERAGE  
OF REPAIRS NOT CAUSED BY THE USE OF NON-HP MEDIA IS  
UNAFFECTED.

---

HP offers a package of ten 5 1/4-inch flexible discs for the HP 9135A (HP part number 92190A). Contact your dealer or nearest HP sales office for instructions on how to order this package.

### Operating Cleanliness

The read/write heads must maintain contact with the disc during read and write operations. Figure 3-7 shows various types of contaminants and their size relationships. A contaminant particle hard enough and of the right size may scratch the media oxide coating or the head surface. Even if not hard enough to scratch, it may be large enough to lift the head from the surface, causing data errors or damage to the media.



**Figure 3-7. 5 1/4-inch Flexible Disc Head/Media Contaminants**

### Handling Flexible Disc Media

The flexible disc is basically maintenance free, but it is delicate and **MUST BE HANDLED CAREFULLY**. Remember, the disc contains your valuable data and programs and should be treated accordingly. A good rule of thumb is to treat your disc as you would a valuable record album. Here are some specific Do's and Don'ts to avoid loss of data or damage to your discs.

**EVEN A LITTLE CARELESSNESS IN DISC HANDLING CAN DRAMATICALLY REDUCE THE LIFE OF THE DISC.**



## Do

### Back Up Discs Frequently

There is always a chance of losing data when mass storage devices are accessed. There are many causes in any computer system—a programming bug, operator error, power failure, or hardware failure. In the case of flexible discs, another mode is possible—media failure from contamination or wearout. **YOUR BEST PROTECTION AGAINST DATA LOSS IS FREQUENT BACKUP OF YOUR FILES.**

### Return Disc To Storage Envelope When Not In Use



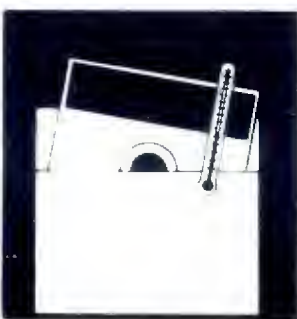
This is the single most important thing to remember about handling your disc because it prolongs disc life by protecting it from dust and scratches. Between uses discs should be stored upright in a dust-free container. The box in which the discs are shipped, or a similar container, is a good choice.

### Operate Your System In A Clean Environment



Airborne contaminants and particles accidentally dropped onto the disc will cause your disc to wear out prematurely and may cause unreliable data storage and retrieval operations. Some of the most common contaminants are **DUST, SMOKE, ASHES, ERASER CRUMBS, and BREADCRUMBS**. Chemical vapors may also cause premature wearout.

### Maintain Proper Temperature And Humidity



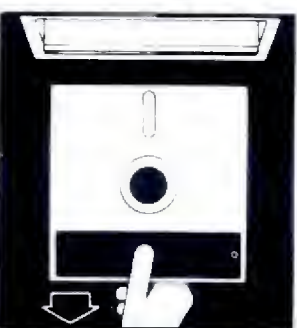
The proper operating range is 10°C (50°F) to 40°C (104°F) and 20% to 80% relative humidity. While temperature is usually easy to control, it may be necessary to make special provisions to keep the humidity in the proper range. Although the disc will continue to operate outside the normal humidity range, it will wear out more quickly and will have a higher error rate.

### Avoid Magnetic Fields



The data is stored on the disc magnetically and can be erased by an external magnetic field. Avoid placing a disc near power transformers, magnets or large disc memories.

### Remove Disc From Drive When Not In Use



Remove the disc completely from the drive when access is not needed for an extended period of time.



### Use A Felt Tip Pen To Label Your Disc



Use a soft felt tip pen to label your disc, and be careful to write only in the label area. Avoid the exposed media while labeling the disc. If possible, write on the large labels provided BEFORE applying them to the disc.

### Replace Discs Frequently

Although discs are designed to provide several million revolutions of useful life, they will eventually wear out. The life of a disc is VERY dependent on how carefully it is handled and how much it is used. A disc used sparingly (less than 20 minutes a day) should last over a year. A disc that is used heavily (more than 2 hours a day) should not be expected to last more than 3 months. Discs should be replaced every three months for a heavily used disc or at least once a year, even for lightly used discs. If you ever see visible signs of abrasion on the disc, do an immediate backup and discard the worn disc.

### Don't

#### Do Not Touch The Surface Of The Disc



The thickness of a fingerprint is enough to lift the head off the disc and cause errors. The oils in a fingerprint will also collect dust which can cause a disc to wear out sooner than it normally would.

#### Do Not Bend Or Fold The Disc



The disc is flexible but will not operate if it is creased. Using ball point pens, rubber bands, paper clips, etc. can crease the disc.

#### Do Not Try To Clean A Disc

The inside surface of the disc jacket is covered with a special material that cleans the disc as it rotates. Any other method of cleaning may cause solvent damage to the media or scratch the disc, causing loss of data. If a disc becomes dirty or scratched, immediately transfer the data to a new disc and dispose of the old disc.

---

### NOTE

If you ever destroy media (if it looks anything like the photo in Figure 3-8, stop using the drive until it can be serviced. This is extremely important, as continued use of the drive may destroy more media. You should clean the drive heads immediately or call the nearest HP sales and service office (see the list in the back of this manual for the nearest office).

---



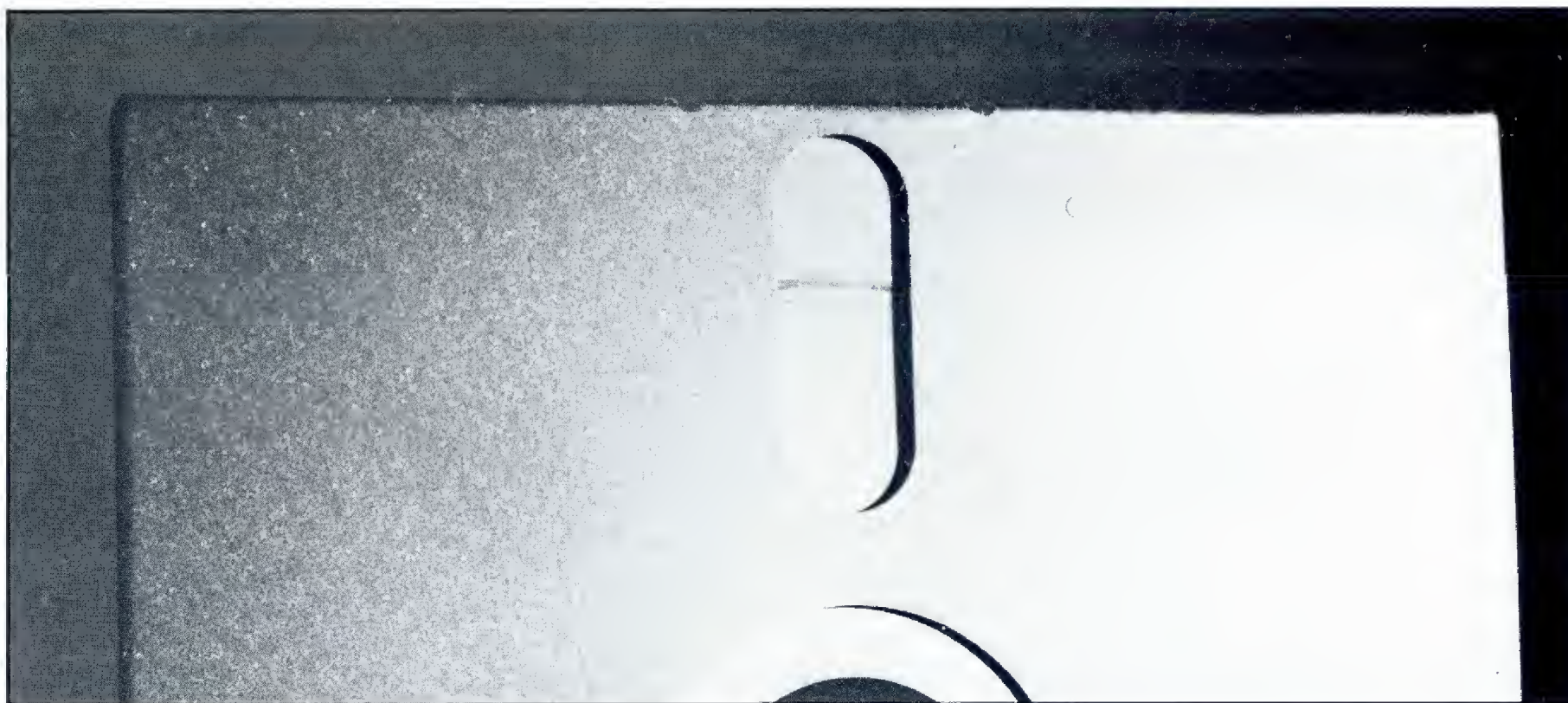


Figure 3-8. Defective 5 1/4-inch Flexible Disc

## Write Protection

Data and programs stored on flexible discs can be protected from being written over (Figure 3-9). The disc is "write protected" by covering the write protect slot with a write protect tab (provided with the discs). This prevents you from writing any information on the disc. The disc can, however, be read normally. To write on a protected disc, remove the write protect tab from the write protect slot. Remember, fingerprints can be disastrous to your data, so do not touch the surface of the disc.

### NOTE

There is no write protect capability on the Winchester drive. Caution must be used to avoid writing over data stored on the Winchester disc.

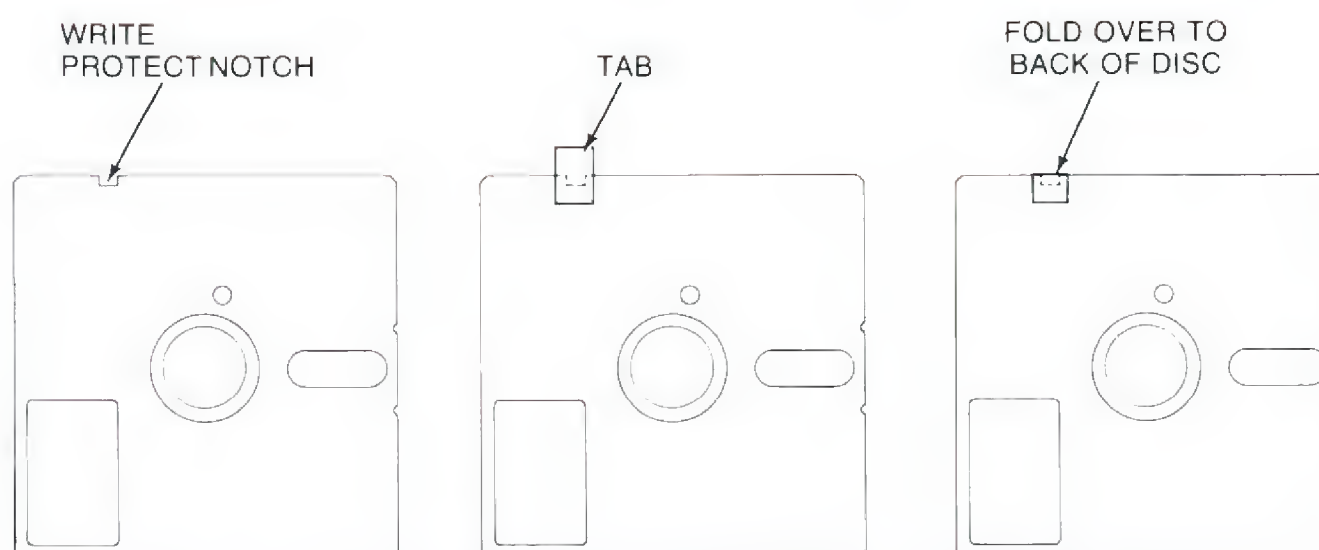
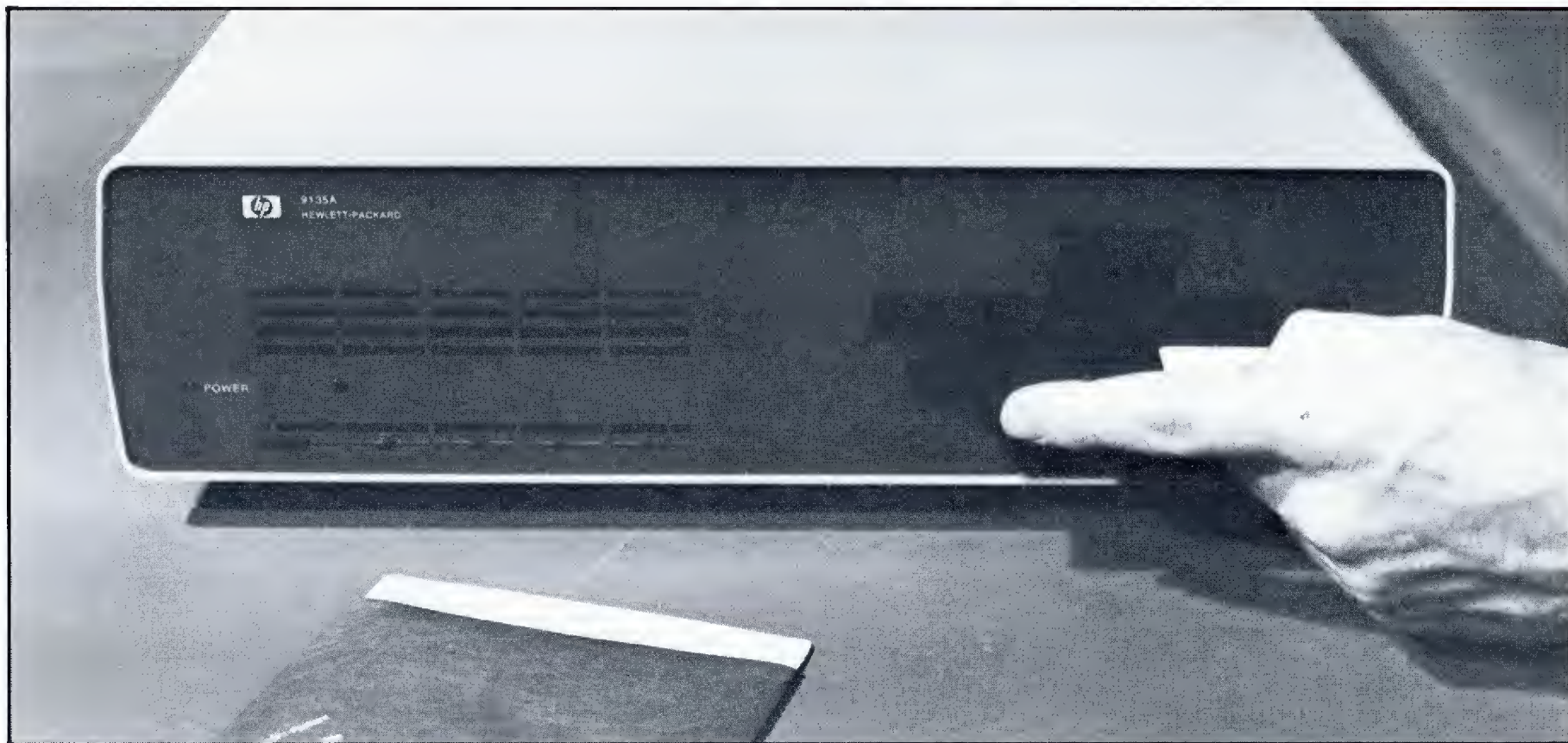


Figure 3-9. 5 1/4-inch Flexible Disc Write Protection



## Inserting and Removing the 5 1/4-inch Flexible Disc

Refer to Figure 3-10 for proper insertion of the flexible disc in the HP 9135A.



**Figure 3-10. 5 1/4-inch Flexible Disc Insertion**

To insert and remove flexible discs, perform these steps:

1. Open the door of the drive by pulling up on the drive latch.
2. Remove the disc from its protective envelope and carefully slide it into the drive until you feel it bottom out against the rear of the drive.
3. Close the door by pressing down on the drive latch. Never force the drive latch, as the media can be latched off center within the protective jacket. The disc can be installed with power on without harming the disc.
4. Remove the disc by pulling up on the drive latch and pulling straight out. Always store discs in their protective envelopes to ensure prolonged disc life.

### 5 1/4-inch Flexible Disc Structure

The surface of the flexible disc is coated with ferromagnetic oxide. Data is stored in the form of binary digits represented by magnetic flux reversals on the disc. Information is stored and retrieved by the disc unit's heads that come in contact with the disc's upper and lower surface.

Information is stored in 35 concentric tracks on each side of the disc (Figure 3-11). The tracks are numbered 0 through 34. Each track is divided into 16 physical records (sectors) numbered 0 through 15. Each record contains 256 bytes (characters) of information. There is an important difference between a physical record and a logical record. A physical record is the smallest accessible unit of data on the disc. It is always the same size (256 bytes). A logical record is one that you define when you create a data file. Its size is variable and depends on the type of data you are storing.



Some of the space on each disc is reserved for the directory. The amount reserved depends on the controlling computer and the number of records in the file directory.

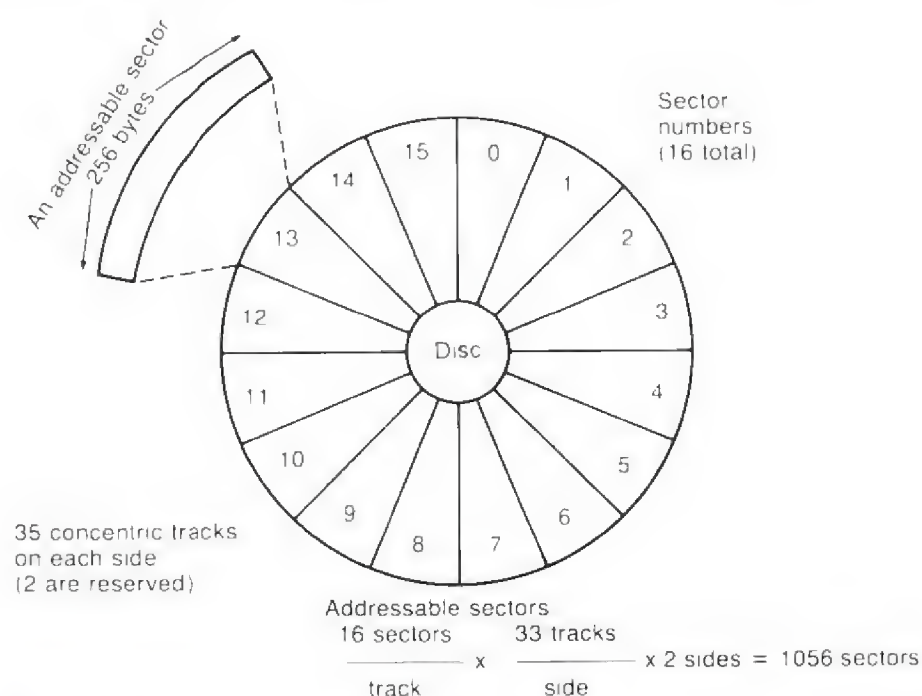


Figure 3-11. 5 1/4-inch Flexible Disc Structure

## Controls and Indicators

The indicators are located on the front panel. The indicators, as shown in Figure 3-12, are the power-on light, the Winchester disc drive access light, and flexible disc access light. The disc access lights are illuminated whenever the disc is accessed for data storage or retrieval.

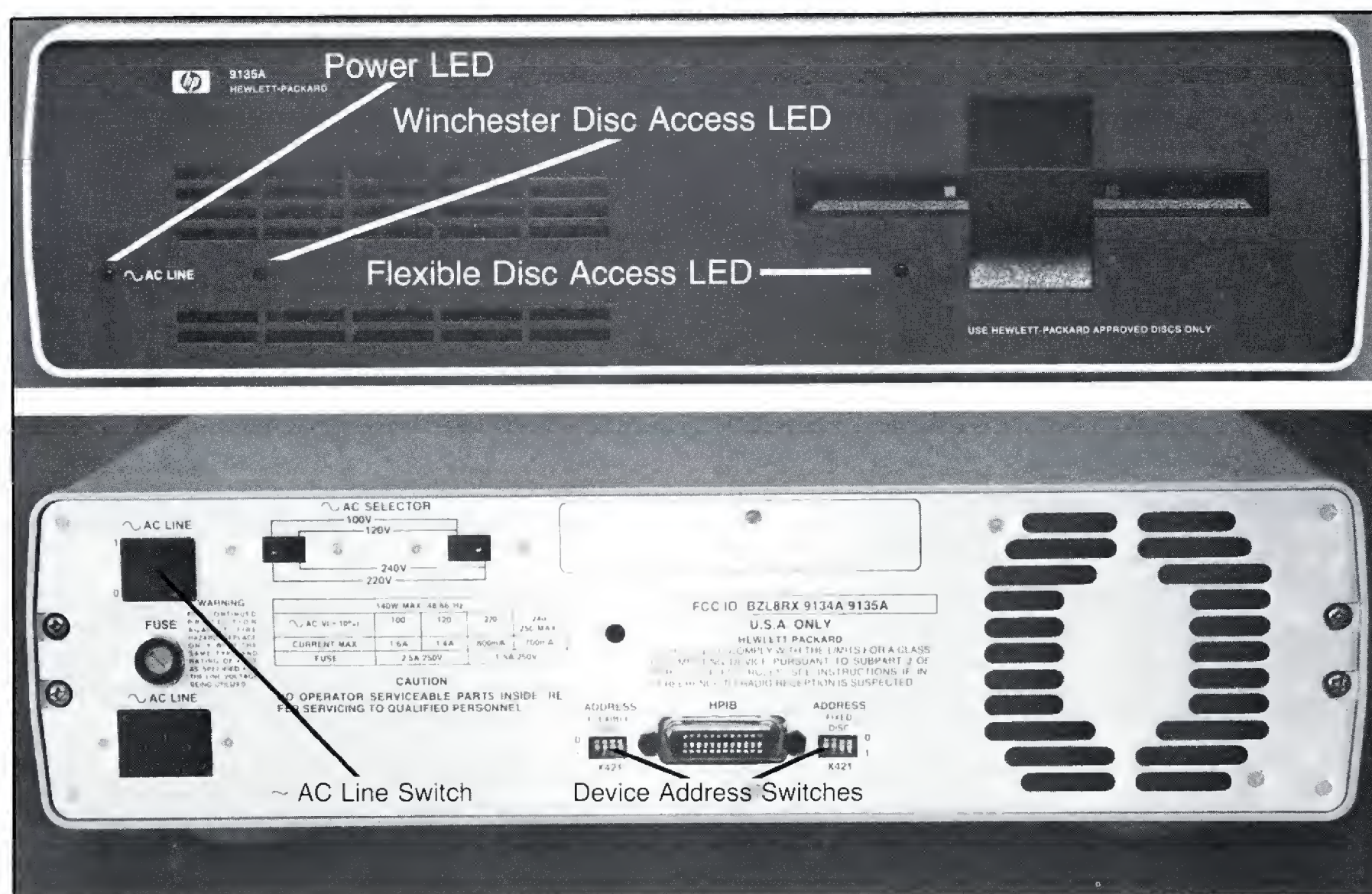


Figure 3-12. 9135A Controls and Indicators

## Applying Power

Before turning the disc memory on, be sure to perform all the procedures in Chapter 2. Locate the ~AC line switch on the rear panel and set it to the "On" or "1" position. The Winchester disc drive requires about 20 seconds after the application of power before it is ready for operation.



## Chapter 4

# Maintenance and Service

- Maintenance
- Service
- Warranty
- Cleaning the Case

### Maintenance

The disc memories in this family of products do not require regular maintenance.

9133A/B – The load pad on the 3 1/2-inch flexible disc drive will wear out over a period of time and must be replaced. Replacing this pad is a complicated process and should only be attempted by a trained service person.

The maintenance schedule for the load pad depends on the use of the drive. The interval for a drive in normal use is 5 years. A heavily-used drive should have its head load pad replaced every 1 to 2 years. Refer to the section titled “Replace Discs Frequently” for determining your drive usage.

9135A – In the event that media is destroyed in the 5 1/4-inch disc drive, a head cleaning kit is available for removing any debris remaining on the disc drive heads. The part number is 92193A.

The performance and life of the flexible disc heads and the flexible disc media depend directly on how carefully they are handled. Be sure to follow the disc care and handling guidelines presented in Chapter 3 and the environmental restrictions presented in the Specifications Table in Chapter 1.

### Service

There are no operator serviceable parts in this family of discs. If you suspect that your disc memory is malfunctioning, call the HP sales office or dealer from which you purchased the unit.

### Warranty

The complete warranty statement for the U.S. and Canada is included inside the front cover of this manual. For other countries, contact your local HP sales office or dealer from which you purchased your unit to determine warranty terms.

If you have questions concerning the warranty, please contact an authorized dealer or the HP sales and service office nearest you (see the back of this manual for nearest office).

## Cleaning the Case

The disc memory case has been painted with a long-lasting, non-toxic, water-based paint. This paint will preserve the appearance of the unit for many years. To clean the case, use the following instructions to insure that you maintain the quality finish. If the case finish becomes damaged, consult the nearest HP sales and service office for touch-up paints that are available.



---

### CAUTION

CHEMICAL SPRAY-ON CLEANERS USED FOR APPLIANCES AND OTHER HOUSEHOLD AND INDUSTRIAL APPLICATIONS MAY DAMAGE THE CASE FINISH. DO NOT USE CLEANERS THAT CONTAIN AMMONIA, BENZENES, CHLORIDES, OR ABRASIVES.

---



Dampen a clean, soft, lint-free cloth in a solution of clean water and mild soap. Wipe the soiled areas of the case, ensuring that no cleaning solution gets inside the unit. For cleaning more heavily soiled areas, a solution of 80% clean water and 20% isopropyl alcohol may be used. Wipe the areas that had cleaning solution applied with another clean, soft, lint-free cloth. A non-abrasive eraser may be used to remove pen and pencil marks.



# Appendix A

## Helpful Hints

### Introduction

The following information is provided to help you avoid possible problems when operating the 9133A/B with Series 100 and 200 mainframes. Refer to your mass storage programming or reference manual for more information on the use of the disc memory with your mainframe.

### Series 100

In the event that the error "CANNOT IDENTIFY ADDRESS 0" should appear on your Series 100 display, press the "LOAD OPS SYS" softkey (F6) to clear the error. This error will most likely occur on the power-up cycle of the system.

### Series 200

#### (With Basic Operating System 2.1 or greater)

When entering the MSUS (Mass Storage Unit Specifier) on your Series 200 mainframe, specify "HP 9121" rather than "HP 82901" for optimum performance of the 3 1/2-inch flexible disc. When the MSUS is entered, the interleave is automatically set to 4 for the HP 82901, and set to 2 for the HP 9121.

Basic Operating Systems (prior to Basic 2.1) previously supplied with the 9826 and 9836 mainframes, when used with the series 200 mainframe, may not allow you to access the 3 1/2-inch flexible disc drive using the HP 9121 MSUS. The MSUS "HP 82901" will have to be used in these instances.

### The Winchester Drive

The Winchester disc drive in the 9133A, 9134A and 9135A emulates a 9895A 8-inch flexible disc drive master and three 8-inch slave drives, each with 1.15 Mbytes of data storage capacity. All references to the 9895A in your mainframe mass storage manuals apply to the Winchester drive.

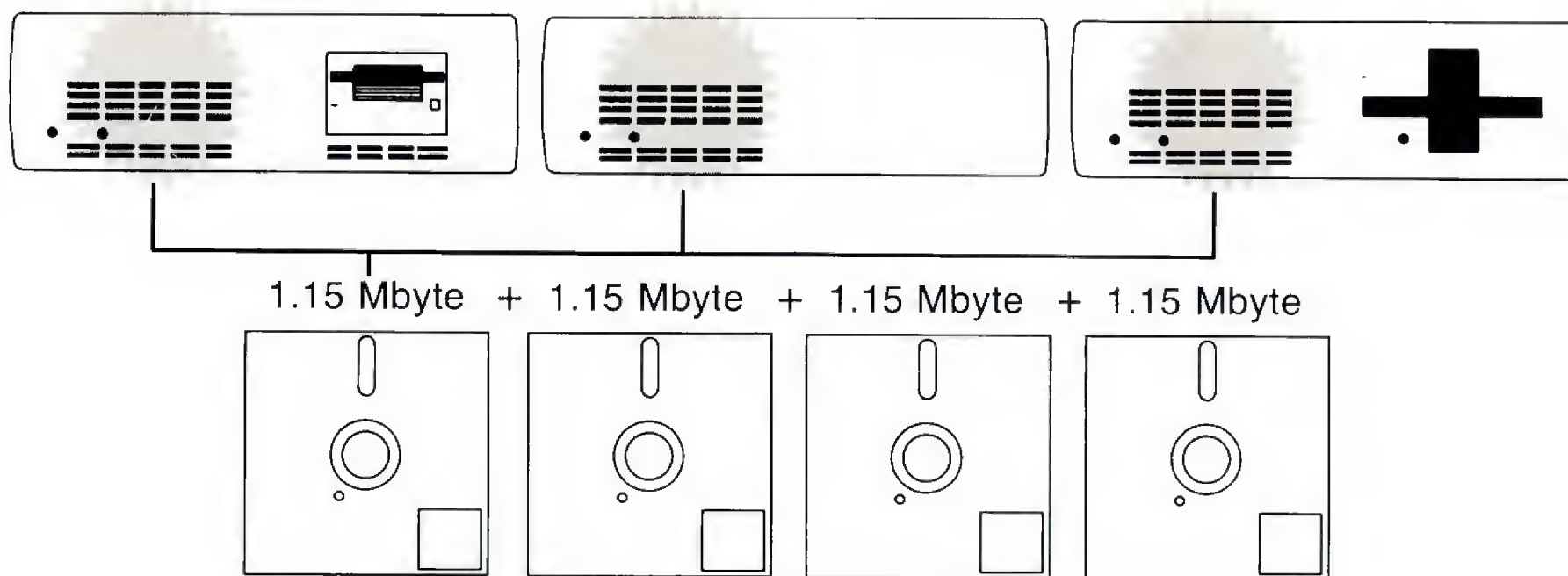
Option 010 of the 9133A, 9134A, and 9135A provides you with one large 4.8 Mbyte volume. The Winchester drive configured as one volume responds to the same commands as the four-volume version.

---

#### NOTE

Be aware that not all operating systems developed for your mainframe will support option 010 of the Winchester drive.

---



OR

One large 4.8 Mbyte Volume w/Option 010

OR

One large 10 Mbyte Volume (B versions)

**Figure A-1. Winchester with and without Option 010**



# SALES & SUPPORT OFFICES

Arranged alphabetically by country

1



## Product Line Sales/Support Key

Key	Product Line
A	Analytical
CM	Components
C	Computer Systems
CP	Computer Systems Primary Service Responsible Office (SRO)
CS	Computer Systems Secondary SRO
E	Electronic Instruments & Measurement Systems
M	Medical Products
MP	Medical Products Primary SRO
MS	Medical Products Secondary SRO
P	Consumer Calculators
.	Sales only for specific product line
..	Support only for specific product line

**IMPORTANT:** These symbols designate general product line capability. They do not insure sales or support availability for all products within a line, at all locations. Contact your local sales office for information regarding locations where HP support is available for specific products.

HP distributors are printed in italics.

## ANGOLA

*Telectra*  
*Empresa Tecnica de Equipamentos*  
*Electricos, S.A.R.L.*  
*R. Barbosa Rodrigues, 41.-I. DT.*  
*Caixa Postal 6487*  
**LUANDA**  
*Tel: 355 15, 355 16*  
*A\*, E, M, P*

## ARGENTINA

Hewlett-Packard Argentina S.A.  
 Avda Santa Fe 2035  
 Martinez 1640 **BUENOS AIRES**  
 Tel: 798-6086, 792-1293  
 Cable: HEWPACKARG  
 A, E, CP, P  
*Biotron S.A.C.I.y.M*  
*Avenida Paseo Colon 221*  
*9 Piso*  
 1399 **BUENOS AIRES**  
 Tel: 30-4846, 30-1851, 30-8384,  
 34-9356, 34-0460, 34-4551  
 Telex: (33)17595 BIONAR  
 Cable: BIOTRON Argentina  
 M  
*Fate S.A. Electronica*  
*Bartolomeu Mitre 833*  
 1036 **BUENOS AIRES**  
 Tel: 74-41011, 74-49277,  
 74-43459  
 Telex: 18137, 22754  
 P

## AUSTRALIA

**Australia Capital Territory**  
 Hewlett-Packard Australia Pty.Ltd.  
 121 Wollongong Street  
**Fyshwick, A.C.T. 2609**  
 Tel: 804-244  
 Telex: 62650  
 Cable: HEWPAARD Canberra  
 A\*, CM, CS, E, MS, P  
**New South Wales**  
 Hewlett-Packard Australia Pty.Ltd.  
 17-23 Talavera Road  
**NORTH RYDE, N.S.W. 2113**  
 P.O. Box 308  
 Tel: 887-1611  
 Telex: 21561  
 Cable: HEWPAARD Sydney  
 A, CM, CP, E, MS, P

## Queensland

Hewlett-Packard Australia Pty.Ltd.  
 5th Floor  
 Teachers Union Building  
 495-499 Boundary Street  
**SPRING HILL, Queensland 4000**  
 Tel: 229-1544  
 Telex: 42133  
 Cable: HEWPAARD Brisbane  
 A, CM, CS, E, MS, P

## South Australia

Hewlett-Packard Australia Pty.Ltd.  
 153 Greenhill Road  
**PARKSIDE, S.A. 5063**  
 Tel: 272-5911  
 Telex: 82536  
 Cable: HEWPAARD Adelaide  
 A\*, CM, CS, E, MS, P

## Victoria

Hewlett-Packard Australia Pty.Ltd.  
 31-41 Joseph Street  
**BLACKBURN, Victoria 3130**  
 Tel: 89-6351  
 Telex: 31-024  
 Cable: HEWPAARD Melbourne  
 A, CM, CP, E, MS, P

## Western Australia

Hewlett-Packard Australia Pty.Ltd.  
 141 Stirling Highway  
**NEDLANDS, W.A. 6009**  
 Tel: 386-5455  
 Telex: 93859  
 Cable: HEWPAARD Perth  
 A, CM, CS, E, MS, P

## AUSTRIA

Hewlett-Packard Ges.m.b.h.  
 Veraufsbuero Graz  
 Grottenhofstrasse 94  
**A-8052 GRAZ**  
 Tel: 21-5-66  
 Telex: 32375  
 CM, C\*, E\*  
 Hewlett-Packard Ges.m.b.h.  
 Wehlstrasse 29  
 P.O. Box 7  
**A-1205 VIENNA**  
 Tel: (222) 35-16-210  
 Telex: 135823/135066  
 A, CM, CP, E, MS, P

## BAHRAIN

*Green Salon*  
*P.O. Box 557*  
**BAHRAIN**  
*Tel: 5503*  
*Telex: 884 19*  
 P

*Wael Pharmacy*  
*P.O. Box 648*  
**BAHRAIN**  
*Tel: 54886, 56123*  
*Telex: 8550 WAEI GJ*  
 M

## BANGLADESH

*The General Electric Co. of*  
*Bangladesh Ltd.*  
*Magnet House 72*  
*Dikusha Commercial Area*  
**MOTIJHELL, Dacca 2**  
*Tel: 252415, 252419*  
*Telex: 734*  
*Cable: GECDAC Dacca*  
 A, E, M

## BELGIUM

Hewlett-Packard Belgium S.A./N.V.  
 Boulevard de la Woluwe 100  
 Woluwedal  
**B-1200 BRUSSELS**  
 Tel: (02) 762-32-00  
 Telex: 23-494 B  
 A, CM, CP, E, MP, P

## BRAZIL

Hewlett-Packard do Brasil I.e.C.  
 Ltda.  
 Alameda Rio Negro, 750  
**ALPHAVILLE 06400 Barueri SP**  
 Tel: 421-1311  
 Telex: 011 23602 HPBR-BR  
 Cable: HEWPAACK Sao Paulo  
 A, CM, CP, E, MS  
 Hewlett-Packard do Brasil I.e.C.  
 Ltda.  
 Rua Padre Chagas, 32  
**90000-PORTO ALEGRE-RS**  
 Tel: 22-2998, 22-5621  
 Cable: HEWPAACK Porto Alegre  
 A\*, CM, E, MS, P\*  
 Hewlett-Packard do Brasil I.e.C.  
 Ltda.  
 Avenida Epitacio Pessoa, 4664  
**20000 RIO DE JANEIRO-RJ**  
 Tel: 286-0237  
 Telex: 021-21905 HPBR-BR  
 Cable: HEWPAACK Rio de Janeiro  
 A, CM, E, MS, P\*

## BURUNDI

*Typomeca S.P.R.L.*  
*B.P. 553*  
**BUJUMBURA**  
*Tel: 2659*  
 P

## CANADA

**Alberta**  
 Hewlett-Packard (Canada) Ltd.  
 210, 7220 Fisher Street S.W.  
**CALGARY, Alberta T2H 2H8**  
 Tel: (403) 253-2713  
 Telex: 610-821-6141  
 A, CM, CP, E\*, MS, P\*  
 Hewlett-Packard (Canada) Ltd.  
 11620A-168th Street  
**EDMONTON, Alberta T5M 3T9**  
 Tel: (403) 452-3670  
 Telex: 610-831-2431  
 A, CM, CP, E, MS, P\*  
**British Columbia**  
 Hewlett-Packard (Canada) Ltd.  
 10691 Shellbridge Way  
**RICHMOND, British Columbia V6X**  
**2W7**  
 Tel: (604) 270-2277  
 Telex: 610-922-5059  
 A, CM, CP, E\*, MS, P\*

## Manitoba

Hewlett-Packard (Canada) Ltd.  
 380-550 Century Street  
 Saint James  
**WINNIPEG, Manitoba R3H 0L8**  
 Tel: (204) 786-6701  
 Telex: 610-671-3531  
 A, CM, CS, E, MS, P\*

## Nova Scotia

Hewlett-Packard (Canada) Ltd.  
 P.O. Box 931  
 900 Windmill Road  
**DARTMOUTH, Nova Scotia B2Y 3Z6**  
 Tel: (902) 469-7820  
 Telex: 610-271-4482  
 CM, CP, E\*, MS, P\*

## Ontario

Hewlett-Packard (Canada) Ltd.  
 552 Newbold Street  
**LONDON, Ontario N6E 2S5**  
 Tel: (519) 686-9181  
 Telex: 610-352-1201  
 A, CM, CS, E\*, MS, P\*  
 Hewlett-Packard (Canada) Ltd.  
 6877 Goreway Drive  
**MISSISSAUGA, Ontario L4V 1M8**  
 Tel: (416) 678-9430  
 Telex: 610-492-4246  
 A, CM, CP, E, MP, P  
 Hewlett-Packard (Canada) Ltd.  
 1020 Morrison Drive  
**OTTAWA, Ontario K2H 8K7**  
 Tel: (613) 820-6483  
 Telex: 610-563-1636  
 A, CM, CP, E\*, MS, P\*

## Quebec

Hewlett-Packard (Canada) Ltd.  
 275 Hymus Boulevard  
**POINTE-CLAIRE, Quebec H9R 1G7**  
 Tel: (514) 697-4232  
 Telex: 610-422-3022  
 A, CM, CP, E, MP, P\*

## CHILE

*Jorge Calcagni y Cia. Ltda.*  
*Arturo Burile 065*  
*Casilla 16475*  
**Correo 9, SANTIAGO**  
*Tel: 220222*  
*Telex: JCALCAGNI*  
 A, E, M, P  
*Olympia (Chile) Ltd.*  
*Rodrico de Araya 1045*  
*Casilla 256-V*  
**SANTIAGO 21**  
*Tel: 25-50-44*  
*Telex: 40-565*  
 P

## COLOMBIA

*Instrumentacion*  
*H. A. Langebaek & Kier S.A.*  
**Carrera 7 No. 48-75**  
**BOGOTA 2, DE**  
**Apartado Aereo 6287**  
**BOGOTA 1 D.E.**  
 Tel: 269-8877  
 Telex: 44400  
 Cable: AARIS Bogota  
 A, E, M, P  
*Instrumentacion*  
*H.A. Langebaek & Kier S.A.*  
**Edif. Camacol, Local 105**  
**Carrera 63 NO. 49-A-31**  
**Apartado 54098**  
**MEDELLIN**  
 Tel: 304475  
 A, E, M, P

## COSTA RICA

*Cientifica Costarricense S.A.*  
*Avenida 2, Calle 5*  
*San Pedro de Montes de Oca*  
**Apartado 10159**  
**SAN JOSE**  
*Tel: 24-38-20, 24-08-19*  
*Telex: 2367 GALGUR CR*  
*Cable: GALGUR*  
 A, E, M, P

## CYPRUS

*Kryponics*  
*19 Gregorios Xenopoulos Street*  
**P.O. Box 1152**  
**NICOSIA**  
*Tel: 45628, 45629*  
*Telex: 3018*  
 E, M, P

## CZECHOSLOVAKIA

*Vyvojova a Provozni Zakladna*  
*Vyzkumnych Ustavu v Bechovicich*  
**CSSR-25097 BECHOVICE U PRAHY**  
*Tel: 89-9341*  
*Telex: 12133*  
 P\*  
*Hewlett-Packard*  
*Obchodni Zastupitelstvi v CSSR*  
*Pisemny styk*  
*Post. schranka 27*  
**CS 118 01 PRAHA 011**  
*Tel: 66-296*  
*Telex: 121353 1HC*  
 A\*, C\*, E\*, M\*, P\*

## DENMARK

Hewlett-Packard A/S  
 Datavej 52  
**DK-3460 BIRKEROD**  
 Tel: (02) 81-66-40  
 Telex: 37409 hpas dk  
 A, CM, CP, E, MS, P  
 Hewlett-Packard A/S  
 Navervej 1  
**DK-8600 SILKEBORG**  
 Tel: (06) 82-71-66  
 Telex: 37409 hpas dk  
 CM, CS, E

## ECUADOR

*CYEDE Cia. Ltda.*  
**P.O. Box 6423 CCI**  
**Avenida Eloy Alfaro 1749**  
**QUITO**  
 Tel: 450-975, 243-052  
 Telex: 2548 CYEDE ED  
 Cable: CYEDE-Quito  
 A, E, P  
*Hospitalar S.A.*  
*Casilla 3590*  
**Robles 625**  
**QUITO**  
 Tel: 545-250, 545-122  
 Cable: HOSPITALAR-Quito  
 M

## EGYPT

*Samitro*  
*Sami Amin Trading Office*  
**18 Abdel Aziz Gawish**  
**ABDINE-CAIRO**  
 Tel: 24-932  
 P  
*International Engineering Associates*  
**24 Hussein Hegazi Street**  
**Kasr-el-Aini**  
**CAIRO**  
 Tel: 23-829  
 Telex: 93830  
 E, M





# SALES & SUPPORT OFFICES

Arranged alphabetically by country

## EL SALVADOR

**IPESA**  
Boulevard de los Heroes  
Edificio Sarah 1148  
**SAN SALVADOR**  
Tel: 252787  
A\*,C,E,M,P

## ETHIOPIA

**Abdella Abdulmalik**  
P.O. Box 2635  
**ADDIS ABABA**  
Tel: 11-93-40  
A,E,M

## FINLAND

Hewlett-Packard Oy  
Revontulentie 7  
SF-02100 **ESPOO** 10  
Tel: (90) 455-0211  
Telex: 121563 hewpa sf  
A,CM,CP,E,MS,P

## FRANCE

Hewlett-Packard France  
Le Ligoures  
Bureau de Vente de  
Aix-en-Provence  
Place Romee de Villeneuve  
F-13090 **AIX-EN-PROVENCE**  
Tel: (42) 59-41-02  
Telex: 410770F  
A,CM,CS,E,MS,P\*

Hewlett-Packard France  
Bureau de Vente de Lyon  
Chemin des Mouilles  
Boite Postale No. 162  
F-69130 **ECULLY** Cedex  
Tel: (78) 33-81-25  
Telex: 310617F  
A,CM,CP,E,MP

Hewlett-Packard France  
Immeuble France Evry  
Tour Lorraine  
Boulevard de France  
F-91035 **EVRY** Cedex  
Tel: (60) 77-96-60  
Telex: 692315F  
CM,E

Hewlett-Packard France  
Batiment Ampere  
Rue de la Commune de Paris  
Boite Postale 300  
F-95153 **LE BLANC MESNIL**  
Tel: (01) 865-44-52  
Telex: 211032F  
CM,CP,E,MS

Hewlett-Packard France  
Avenue du President JF Kennedy  
F-33700 **MERIGNAC**  
Tel: (56) 34-00-84  
Telex: 550105F  
CM,CP,E,MS

Hewlett-Packard France  
32 Rue Lothaire  
F-57000 **METZ**  
Tel: (87) 65-53-50  
CM,CS

Hewlett-Packard France  
Avenue des Tropiques  
Zone d'activites de Courtaboeuf  
Boite Postale 6  
F-91401 **ORSAY** Cedex  
Tel: (1) 907-78-25  
Telex: 600048F  
A,CM,CP,E,MP,P

Hewlett-Packard France  
15 Boulevard De L'Amiral Bruix  
F-75016 **PARIS**  
Tel: (01) 502-12-20  
Telex: 613663F  
CM,CP,MS,P

Hewlett-Packard France  
2 Allee de la Bourgonette  
F-35100 **RENNES**  
Tel: (99) 51-42-44  
Telex: 740912F  
CM,CS,E,MS,P\*

Hewlett-Packard France  
4 Rue Thomas Mann  
F-67033 **STRASSBOURG** Cedex  
Tel: (88) 28-56-46  
Telex: 890141F  
CM,CS,E,MS,P\*

Hewlett-Packard France  
20 Chemin de la Cepiere  
31081 **TOULOUSE** Cedex  
Tel: (61) 40-11-12  
Telex: 531639F  
A,CM,CS,E,P\*

Hewlett-Packard France  
Bureau de Vente de Lille  
Immeuble Pericentre  
Rue Van Gogh  
F-59650 **VILLENEUVE D'ASQ**  
Tel: (20) 91-41-25  
Telex: 160124F  
CM,CS,E,MS,P\*

## GERMAN FEDERAL REPUBLIC

Hewlett-Packard GmbH  
Technisches Buro Berlin  
Keithstrasse 2-4  
D-1000 **BERLIN** 30  
Tel: (030) 24-90-86  
Telex: 018 3405 hpbln d  
CM,CS,E,P

Hewlett-Packard GmbH  
Technisches Buro Boblingen  
Herrenberger Strasse 110  
D-7030 **BOBLINGEN**  
Tel: (07031) 667-1  
Telex: 07265739 bbn  
A,CM,CP,E,MP,P

Hewlett-Packard GmbH  
Technisches Buro Dusseldorf  
Emanuel-Leutze-Strasse 1  
D-4000 **DUSSELDORF**  
Tel: (0211) 5971-1  
Telex: 085/86 533 hpdd d  
A,CM,CP,E,MS,P

Hewlett-Packard GmbH  
Vertriebszentrale Frankfurt  
Berner Strasse 117  
Postfach 560 140  
D-6000 **FRANKFURT** 56  
Tel: (0611) 50-04-1  
Telex: (841) 04 13249 hptfm d  
A,CM,CP,E,MP,P

Hewlett-Packard GmbH  
Technisches Buro Hamburg  
Kapstadtring 5  
D-2000 **HAMBURG** 60  
Tel: (040) 63804-1  
Telex: 021 63 032 hphh d  
A,CM,CP,E,MS,P

Hewlett-Packard GmbH  
Technisches Buro Hannover  
Am Grossmarkt 6  
D-3000 **HANNOVER** 91  
Tel: (0511) 46-60-01  
Telex: 092 3259  
A,CM,CS,E,MS,P

Hewlett-Packard GmbH  
Technisches Buro Nurnberg  
Neumeyerstrasse 90  
D-8500 **NURNBERG**  
Tel: (0911) 56-30-83  
Telex: 0623 860  
CM,CS,E,MS,P

Hewlett-Packard GmbH  
Technisches Buro Munchen  
Eschenstrasse 5  
D-8021 **TAUFKIRCHEN**  
Tel: (089) 6117-1  
Telex: 0524985  
A,CM,CP,E,MS,P

## GREAT BRITAIN

Hewlett-Packard Ltd.  
Trafalgar House  
Navigation Road  
**ALTRINCHAM**  
Cheshire WA14 1NU  
Tel: (061) 928-6422  
Telex: 668068  
A,CM,CP,E\*,MS

Hewlett-Packard Ltd.  
Lorrilleaux Bolton Premises  
Morely Road, Staplehill  
**BRISTOL** BS16 4OT  
Tel: (0272) 570743  
CM,CS,MS

Hewlett-Packard Ltd.  
14 Wesley Street  
**CASTLEFORD**  
Yorkshire WF10 1AE  
Tel: (0977) 550016  
Telex: 5557355  
CM,CP

Hewlett-Packard Ltd.  
9 Savoy Street  
**LONDON** WC2R 0BA  
Tel: 013797700  
CM,CP

Hewlett-Packard Ltd.  
Fourier House  
257-263 High Street  
**LONDON COLNEY**, St. Albans  
Herts., AL2 1HA  
Tel: (0727) 24400  
Telex: 1-8952716  
CM,CP,E,MS

Hewlett-Packard Ltd  
Tradax House, St. Mary's Walk  
**MAIDENHEAD**  
Berkshire, SL6 1ST  
Tel: (0628) 39151  
CM,CP

Hewlett-Packard Ltd.  
308/314 Kings Road  
**READING**, Berkshire  
Tel: 61022  
Telex: 84-80-68  
A,CM,E\*,MS

Hewlett-Packard Ltd.  
Quadrangle  
106-118 Station Road  
**REDHILL**, Surrey RH1 1PS  
Tel: (0737) 68655  
A,CM,CP,E,MS,P

Hewlett-Packard Ltd.  
Westminster House  
190 Stratford Road  
**SHIRLEY**, SOLIHULL  
West Midlands B90-3BJ  
Tel: (021) 7458800  
Telex: 339105  
CM,CP,MS

Hewlett-Packard Ltd.  
King Street Lane  
**WINNERSH**, Wokingham  
Berkshire RG11 5AR  
Tel: (0734) 784774  
Telex: HEWPIE WINNERSH 847178  
A,CM,E,MP,P

## GREECE

**Kostas Karaynnis**  
8 Omirou Street  
**ATHENS** 133  
Tel: 32-30-303, 32-37-371  
Telex: 21 59 62 RKAR GR  
E,M,P

"Plaiso"  
G. Gerados  
24 Stournara Street  
**ATHENS**  
Tel: 36-11-160  
Telex: 21 9492  
P

## GUAM

**Guam Medical Supply, Inc.**  
Jay Eze Bldg., Room 210  
P.O. Box 8947  
**TAMUNING** 96911  
Tel: 6464513  
Cable: EARMED Guam  
M,P

## GUATEMALA

**IPESA**  
Avenida Reforma 3-48  
Zona 9  
**GUATEMALA CITY**  
Tel: 316627, 314786, 664715  
Telex: 4192 Teltro Gu  
A,C,E,M,P

## HONG KONG

Hewlett-Packard Hong Kong, Ltd.  
Room 105, Austin Center  
1st Floor  
21 Austin Avenue  
TST P.O. Box 98524  
**KOWLOON**, Hong Kong  
Tel: 3-721143/8  
Telex: 36678 HEWPA HX  
Cable: PASIALTO Hong Kong  
E,CP,P

Hewlett-Packard Hong Kong, Ltd.  
11th Floor, Four Seas Building  
212 Nathan Road  
P.O. Box 795  
**KOWLOON**, Hong Kong  
Tel: 3697446  
Telex: 36678 HEWPA HX  
Cable: HEWPAK Hong Kong  
E,CP,P

**Schmidt & Co. (Hong Kong) Ltd.**  
Wing On Centre, 28th Floor  
Connaught Road, C.  
**HONG KONG**  
Tel: 5-455644  
Telex: 74766 SCHMX HX  
A,M

## ICELAND

**Elding Trading Company Inc.**  
Hafnarnvoli-Tryggvagotlu  
P.O. Box 895  
**IS-REYKJAVIK**  
Tel: 1-58-20, 1-63-03  
M

## INDIA

**Blue Star Ltd.**  
Bhavdeep  
Stadium Road  
**AHMEDABAD** 380 014  
Tel: 42932  
Telex: 012-234  
Cable: BLUEFROST  
E

**Blue Star Ltd.**  
11 Magarath Road  
**BANGALORE** 560 025  
Tel: 55668  
Telex: 0845-430  
Cable: BLUESTAR  
A,CM,C,E

**Blue Star Ltd.**  
Band Box House  
Prabhadevi  
**BOMBAY** 400 025  
Tel: 45-73-01  
Telex: 011-3751  
Cable: BLUESTAR  
A,M

**Blue Star Ltd.**  
Sahas  
414/2 Vir Savarkar Marg  
Prabhadevi  
**BOMBAY** 400 025  
Tel: 46 65 55  
Telex: 011-4093  
Cable: FROSTBLUE  
A,CM,C,E,M

**Blue Star Ltd.**  
7 Hare Street  
**CALCUTTA** 700 001  
Tel: 12-01-31  
Telex: 021-7655  
Cable: BLUESTAR  
A,M

**Blue Star Ltd.**  
Meenakshi Mandiram  
XXXV/1379-2 Mahatma Gandhi  
Road  
**COCHIN** 682-016  
Tel: 32069  
Telex: 085-514  
Cable: BLUESTAR  
A\*

**Blue Star Ltd.**  
133 Kodambakkam High Road  
**MADRAS** 600 034  
Tel: 82057  
Telex: 041-379  
Cable: BLUESTAR  
A,M

**Blue Star Ltd.**  
Bhandari House, 7th/8th Floors  
91 Nehru Place  
**NEW DELHI** 110 024  
Tel: 682547, 682970  
Telex: 031-2463  
Cable: BLUESTAR  
A,CM,C,E,M

**Blue Star Ltd.**  
1-1-117/1 Sarojini Devi Road  
**SECUNDERABAD** 500 033  
Tel: 70126  
Telex: 0155-459  
Cable: BLUESTAR  
A,E

**Blue Star Ltd.**  
T.C. 7/603 Poornima  
Maruthankuzhi  
**TRIVANDRUM** 695 013  
Tel: 65799  
Telex: 0884-259  
Cable: BLUESTAR  
E



# SALES & SUPPORT OFFICES

Arranged alphabetically by country

3



## INDONESIA

**BERCA Indonesia P.T.**  
P.O. Box 496/Jkt.  
JL. Abdul Muis 62  
**JAKARTA**  
Tel: 373009  
Telex: 46748 BERSAL IA  
Cable: BERSAL  
A,E,M,P  
**BERCA Indonesia P.T.**  
J.L. Jimento 23  
**SURABAYA**  
Tel: 42027  
Telex: 31146 BERSAL S.D.  
Cable: BERCACON  
A\*,E,M,P

## IRAQ

Hewlett-Packard Trading S.A.  
Mansoor City 9B/3/7  
**BAGHDAD**  
Tel: 5514973  
Telex: 2455 HEPARAO 1k  
CP

## IRELAND

Hewlett-Packard Ltd.  
Kestrel House  
Clanwilliam Place  
Lower Mount Street  
**DUBLIN 2, Eire**  
Tel: 680424, 680426  
Telex: 30439  
A,E,P\*  
Hewlett-Packard Ltd.  
2C Avonberg Ind. Est.  
Long Mile Road  
**DUBLIN 12, Eire**  
Tel: 514322, 514224  
Telex: 30439  
A\*,CP,E,MS,P\*  
Cardiac Services Ltd.  
Kilmore Road  
Artane  
**DUBLIN 5, Eire**  
Tel: (01) 315820  
M

## ISRAEL

Electronics & Engineering Div.  
Motorola Israel Ltd.  
16 Kremenetski Street  
P.O. Box 25016  
**TEL-AVIV**  
Tel: 338973  
Telex: 33569  
Cable: BASTEL Tel-Aviv  
A,CM,C,E,M,P

## ITALY

Hewlett-Packard Italiana S.p.A.  
Via Martin Luther King, 38/III  
I-40132 **BOLOGNA**  
Tel: (051) 402394  
Telex: 511630  
CM,CS,E,MS  
Hewlett-Packard Italiana S.p.A.  
Via G. Di Vittorio 9  
I-20063 **CERNUSCO SUL NAVIGLIO**  
Tel: (2) 903691  
Telex: 334632  
A,CM,CP,E,MP,P  
Hewlett-Packard Italiana S.p.A.  
Via Nuova san Rocco A  
Capadimonte, 62A  
I-80135 **NAPOLI**  
Tel: (081) 7413544  
A,CM,CS,E

Hewlett-Packard Italiana S.p.A.  
Via Turazza 14  
I-35100 **PADOVA**  
Tel: (49) 664888  
Telex: 430315  
A,CM,CS,E,MS  
Hewlett-Packard Italiana S.p.A.  
Via G. Armellini 10  
I-00143 **ROMA**  
Tel: (06) 546961  
Telex: 610514  
A,CM,CS,E,MS,P\*  
Hewlett-Packard Italiana S.p.A.  
Corso Giovanni Lanza 94  
I-10133 **TORINO**  
Tel: (011) 682245, 659308  
Telex: 221079  
CM,CS,E

## JAPAN

Yokogawa-Hewlett-Packard Ltd.  
Inoue Building  
1348-3, Asahi-cho  
**ATSUGI, Kanagawa 243**  
Tel: (0462) 24-0451  
CM,C\*,E  
Yokogawa-Hewlett-Packard Ltd.  
Kumagaya Ashai Building  
4 Tusukuba, 3-chome  
**KUMAGAYA, Saitama 360**  
Tel: (0485) 24-6563  
CM,CS,E  
Yokogawa-Hewlett-Packard Ltd.  
Mito Mitsui Building  
4-73, San-no-maru, 1-chome  
**MITO, Ibaragi 310**  
Tel: (0292) 25-7470  
CM,CS,E  
Yokogawa-Hewlett-Packard Ltd.  
Sunitomo Seimei Bldg.  
11-2 Shimo-sasajima-cho  
Nakamura-ku  
**NAGOYA, Aichi 450**  
Tel: (052) 581-1850  
CM,CS,E,MS  
Yokogawa-Hewlett-Packard Ltd.  
Chuo Bldg., 4TH FLOOR  
54-20 Nishinakajima, 5-chome  
Yodogawa-ku, Osaka-shi  
**OSAKA, 532**  
Tel: (06) 304-6021  
Telex: 523-3624 YHPOSA  
A,CM,CP,E,MP,P\*  
Yokogawa-Hewlett-Packard Ltd.  
29-21 Takaido-Higashi 3-chome  
Suginami-ku **TOKYO 168**  
Tel: (03) 331-6111  
Telex: 232-2024 YHPTOK  
Cable: YUHPMARKET TOK23 724  
A,CM,CP,E,MP,P\*  
Yokogawa-Hewlett-Packard Ltd.  
Tanigawa Building  
2-24-1 Tsuruya-cho  
Kanagawa-ku  
**YOKOHAMA, Kanagawa 221**  
Tel: (045) 312-1252  
Telex: 382-3204 YHP YOK  
CM,CS,E

## JORDAN

Mouasher Cousins Company  
P.O. Box 1387  
**AMMAN**  
Tel: 21456, 24907, 39907  
Telex: 21456 SABCO JO  
E,M,P

## KENYA

International Aeradio (E.A.) Ltd.  
P.O. Box 95221  
**MOMBASA**  
M  
ADCOM Ltd., Inc.  
City House, Wabera Street  
P.O. Box 30635  
**NAIROBI**  
Tel: 331955  
Telex: 22639  
A\*,E,M  
International Aeradio (E.A.) Ltd.  
P.O. Box 19012  
Nairobi Airport  
**NAIROBI**  
Tel: 336055, 336056  
Telex: 22201, 22301  
M

## KOREA

Samsung Electronics  
C.P.O. 2775  
**SEOUL**  
Tel: 8334311, 8330002, 8330006  
Telex: SAMSAN 27364  
A,C,E,M,P

## KUWAIT

Al-Khalidya Trading & Contracting  
P.O. Box 830 Safat  
**KUWAIT**  
Tel: 42-4910, 41-1726  
Telex: 2481 Areeg kt  
A,E,M  
Photo & Cine Equipment  
P.O. Box 270 Safat  
**KUWAIT**  
Tel: 42-2846, 42-3801  
Telex: 2247 Malin  
P

## LUXEMBOURG

Hewlett-Packard Belgium S.A./N.V.  
Boulevard de la Woluwe 100  
Woluwedail  
**B-1200 BRUSSELS**  
Belgium  
Tel: 762/32/00  
Telex: 23-494 paloben bru  
A,CP,E,MP,P

## MALAYSIA

Hewlett-Packard Sales (Malaysia)  
Sdn. Bhd.  
Suite 2.21/2.22  
Bangunan Angkasa Raya  
Jalan Ampang  
**KUALA LUMPUR**  
Tel: 483544  
Telex: MA31011  
A,CP,E,MP,P\*  
Protel Engineering  
P.O. Box 1917  
Lot 319, Satok Road  
Kuching, **SARAWAK**  
Tel: 53544  
Telex: MA 70904 PROMAL  
Cable: PROTELENG  
A,E,M

## MEXICO

Hewlett-Packard Mexicana, S.A. de  
C.V.  
Av. Periferico Sur No. 6501  
Tepepan, Xochimilco  
**MEXICO CITY 23, D.F.**  
Tel: (905) 676-4600  
Telex: 017-74-507  
A,CP,E,MS,P

Hewlett-Packard Mexicana, S.A. de  
C.V.  
Rio Volga #600 Colonia del Valle  
**MONTERREY, N.L.**  
Tel: 78-42-93, 78-42-40, 78-42-41  
Telex: 038-410  
CS

## MOROCCO

Dolbeau  
81 rue Karatchi  
**CASABLANCA**  
Tel: 3041-82, 3068-38  
Telex: 23051, 22822  
E  
Gerep  
2 rue d'Agadir  
Boite Postale 156  
**CASABLANCA**  
Tel: 272093, 272095  
Telex: 23 739  
P

## MOZAMBIQUE

A.N. Goncalves Ltd.  
162, 1° Apt. 14 Av. D. Luis  
Caixa Postal 107  
**MAPUTO**  
Tel: 27091, 27114  
Telex: 6-203 NEGON Mo  
Cable: NEGON  
A,E,M,P

## NETHERLANDS

Hewlett-Packard Nederland B.V.  
Van Heuven Goedhartlaan 121  
NL 1181KK **AMSTELVEEN**  
Tel: (20) 47-20-21  
Telex: 13 216  
A,CM,CP,E,MP,P  
Hewlett-Packard Nederland B.V.  
Bongerd 2  
NL2906 VK **CAPELLE A/D IJssel**  
Tel: (10) 51-64-44  
Telex: 21261 hepac nl  
A,CM,CP

## NEW ZEALAND

Hewlett-Packard (N.Z.) Ltd.  
169 Manukau Road  
P.O. Box 26-189  
Epsom, **AUCKLAND**  
Tel: 68-7159  
Cable: HEWPACK Auckland  
CM,CS,E,P\*  
Northrop Instruments & Systems  
Ltd.  
Eden House, 44 Khyber Pass Road  
P.O. Box 9682  
Newmarket, **AUCKLAND**  
Tel: 794-091  
A,M  
Northrop Instruments & Systems  
Ltd.  
Terrace House, 4 Oxford Terrace  
P.O. Box 8388  
**CHRISTCHURCH**  
Tel: 64-165  
A,M  
Hewlett-Packard (N.Z.) Ltd.  
4-12 Cruickshank Street  
P.O. Box 9443  
Kilbirnie, **WELLINGTON 3**  
Tel: 877-199  
Cable: HEWPACK Wellington  
CM,CP,E,P

Northrop Instruments & Systems  
Ltd.  
Sturdee House  
85-87 Ghuznee Street  
P.O. Box 2406  
**WELLINGTON**  
Tel: 850-091  
Telex: NZ 31296  
A,M

## NIGERIA

The Electronics Instrumentations  
Ltd.  
N6B/770 Oyo Road  
Oluseun House  
P.M.B. 5402  
**IBADAN**  
Tel: 461577  
Telex: 31231 TEIL NG  
A,E,M,P  
The Electronics Instrumentations  
Ltd.  
144 Agege Motor Road, Mushin  
P.O. Box 6645  
Mushin, **LAGOS**  
A,E,M,P

## NORTHERN IRELAND

Cardiac Services Company  
95A Finaghy Road South  
**BELFAST BT 10 OBY**  
Tel: (0232) 625-566  
Telex: 747626  
M

## NORWAY

Hewlett-Packard Norge A/S  
Nygaardsgaten 114  
P.O. Box 4210  
N-5013 Nygaardsgaten, **BERGEN**  
Tel: (05) 21-97-33  
Telex: 16621 hpnas n  
CM,CS,E  
Hewlett-Packard Norge A/S  
Oestendalen 18  
P.O. Box 34  
N-1345 **OESTERAAS**  
Tel: (02) 17-11-80  
Telex: 16621 hpnas n  
A\*,CM,CP,E,MS,P

## OMAN

Khimji Ramdas  
P.O. Box 19  
**MUSCAT**  
Tel: 72-22-17, 72-22-25  
Telex: 3289 BROKER MB MUSCAT  
P

## PAKISTAN

Mushko & Company Ltd.  
10, Bazar Road  
Sector G-6/4  
**ISLAMABAD**  
Tel: 28624  
Cable: FEMUS Rawalpindi  
A,E,M,P  
Mushko & Company Ltd.  
Oosman Chambers  
Abdullah Haroon Road  
**KARACHI 0302**  
Tel: 511027, 512927  
Telex: 2894 MUSHKO PK  
Cable: COOPERATOR Karachi  
A,E,M,P\*





# SALES & SUPPORT OFFICES

Arranged alphabetically by country

## PANAMA

Electronico Balboa, S.A.  
Apartado 4929  
Panama 5  
Calle Samuel Lewis  
Edificio "Alfa" No. 2  
**CIUDAD DE PANAMA**  
Tel: 64-2700  
Telex: 3480380  
Cable: ELECTRON Panama  
A,E,M,P  
Foto Internacional, S.A.  
P.O. Box 2068  
Free Zone of Colon  
**COLON 3**  
Tel: 45-2333  
Telex: 3485126  
Cable: IMPORT COLON/Panama  
P

## PERU

Compania Electro Medica S.A.  
Los Flamencos 145, San Isidro  
Casilla 1030  
**LIMA 1**  
Tel: 41-4325  
Telex: Pub. Booth 25424 SISIDRO  
Cable: ELMED Lima  
A,E,M,P

## PHILIPPINES

The Online Advanced Systems  
Corporation  
Rico House, Amoroso Cor. Herrera  
Street  
Legaspi Village, Makati  
P.O. Box 1510  
**Metro MANILA**  
Tel: 85-35-81, 85-34-91, 85-32-21  
Telex: 3274 ONLINE  
A,C,E,M  
Electronic Specialists and  
Proponents Inc.  
690-B Epifanio de los Santos  
Avenue  
Cubao, **QUEZON CITY**  
P.O. Box 2649 Manila  
Tel: 98-96-81, 98-96-82, 98-96-83  
Telex: 742-40287  
Cable: ESPINC MANILA  
P

## POLAND

Buro Informacji Technicznej  
Hewlett-Packard  
Ul Slawki 2, 6P  
PL00-950 **WARSZAWA**  
Tel: 39-59-62, 39-67-43  
Telex: 81 24 53  
A,C\*,E\*,M\*,P\*

## PORTUGAL

Teletra-Empresa Tecnica de  
Equipamentos Electricos S.a.r.l.  
Rua Rodrigo da Fonseca 103  
P.O. Box 2531  
**P-LISBON 1**  
Tel: (19) 68-60-72  
Telex: 12598  
A,C,E,P  
Mundinter  
Intercambio Mundial de Comercio  
S.a.r.l.  
P.O. Box 2761  
Avenida Antonio Augusto de Aguiar  
138  
**P-LISBON**  
Tel: (19) 53-21-31, 53-21-37  
Telex: 16691 munter p  
M

## PUERTO RICO

Hewlett-Packard Puerto Rico  
Calle 272  
#203 Urb. Country Club  
**RIO PIEDRAS**, Puerto Rico 00924  
Tel: (809) 762-7255  
Telex: 345 0514  
A,CP

## QATAR

Business Communications Qatar  
P.O. Box 3656  
**DOHA**  
Tel: 5851  
Telex: 4454  
P  
Nasser Trading & Contracting  
P.O. Box 1563  
**DOHA**  
Tel: 22170  
Telex: 4439 NASSER  
M

## RHODESIA

Field Technical Sales  
45 Kelvin Road North  
P.O. Box 3548  
**SALISBURY**  
Tel: 705231  
Telex: RH 4122  
A,E,M,P

## ROMANIA

Hewlett-Packard Reprezentanta  
Boulevard Nicolae Balcescu 16  
**BUCURESTI**  
Tel: 130725  
Telex: 10440  
C\*,E\*

## SAUDI ARABIA

Modern Electronic Establishment  
P.O. Box 193  
**AL-KHOBAR**  
Tel: 44-678, 44-813  
Telex: 670136  
Cable: ELECTA AL-KHOBAR  
C,E,M,P  
Modern Electronic Establishment  
P.O. Box 1228, Baghdadiah Street  
**JEDDAH**  
Tel: 27-798  
Telex: 401035  
Cable: ELECTA JEDDAH  
C,E,M,P  
Modern Electronic Establishment  
P.O. Box 2728  
**RIYADH**  
Tel: 62-596, 66-232  
Telex: 202049  
C,E,M,P

## SCOTLAND

Hewlett-Packard Ltd.  
Royal Bank Buildings  
Swan Street  
**BRECHIN**, Angus, Scotland  
Tel: 3101, 3102  
CM,CS  
Hewlett-Packard Ltd.  
**SOUTH QUEENSFERRY**  
West Lothian, EH30 9TG  
GB-Scotland  
Tel: (031) 3311000  
Telex: 72682  
CM,CP,E,MS

## SINGAPORE

Hewlett-Packard Singapore (Pte.)  
Ltd.  
6th Floor, Inchcape House  
450-452 Alexandra Road  
**SINGAPORE 0511**  
P. O. Box 58 Alexandra Post Office  
Singapore 9115  
Tel: 631788  
Telex: HPSGSO RS 32409  
Cable: HEWPACK, Singapore  
A,CP,E,MS,P

## SOUTH AFRICA

Hewlett-Packard South Africa (Pty.)  
Ltd.  
Pine Park Center  
Forest Drive, Pinelands  
**CAPE PROVINCE**, 7405  
P.O. Box 120  
Howard Place  
**CAPE PROVINCE 7450**  
Tel: 53-7955, 53-7956, 53-7957,  
53-7958, 53-7959  
Telex: 57-0006  
A,CM,CS,E,MS,P

Hewlett-Packard South Africa (Pty.)  
Ltd.  
P.O. Box 37066  
Overport  
**DURBAN 4067**  
Tel: 28-4178, 28-4179, 28-4110  
CM,CS  
Hewlett-Packard South Africa (Pty.)  
Ltd.  
Hewlett-Packard Centre  
Daphne Street  
Private Bag Wendywood  
**SANDTON 2144**  
Tel: 802-5111  
Telex: 84782  
Cable: HEWPACK Johannesburg  
A,CM,CP,E,MS,P

## SPAIN

Hewlett-Packard Espanola S.A.  
c/Entenza 312  
**E-BARCELONA 29**  
Tel: (3) 322-24-51, 321-73-54  
Telex: 52603 hpbe e  
A,CM,CP,E,MS,P  
Hewlett-Packard Espanola S.A.  
c/San Vicente s/n  
Edificio Albia II, 7°B  
**E-BILBAO 1**  
Tel: 423-82-06, 423-83-06  
A,CM,E,MS  
Hewlett-Packard Espanola S.A.  
Calle Jerez 3  
**E-MADRID 16**  
Tel: (1) 458-2600  
Telex: 23515 hpe  
A,CM,E,MP,P  
Hewlett-Packard Espanola S.A.  
Colonia Mirasierra  
Edificio Juban  
c/o Costa Brava 13  
**E-MADRID 34**  
Tel: (1) 734-8061, 734-1162  
CM,CP  
Hewlett-Packard Espanola S.A.  
Av Ramon y Cajal 1  
Edificio Sevilla 1, Planta 9  
**E-SEVILLA 5**  
Tel: (954) 64-44-54, 64-44-58  
A,CM,CS,MS,P  
Hewlett-Packard Espanola S.A.  
C/Ramon Gorrillo 1 (Entlo.)  
**E-VALENCIA 10**  
Tel: (96) 361-1354  
CM,CS,P

## SRI LANKA

Metropolitan Agencies Ltd.  
209/9 Union Place  
**COLOMBO 2**  
Tel: 35947  
Telex: 1377METROLTD CE  
Cable: METROLTD  
A,E,M,P

## SUDAN

Radison Trade  
P.O. Box 921  
**KHARTOUM**  
Tel: 44048  
Telex: 375  
A,E,M

## SURINAM

Surtel Radio Holland N.V.  
Grote Hofstr. 3-5  
P.O. Box 155  
**PARAMARIBO**  
Tel: 72118, 77880  
Cable: Surtel  
E,M

## SWEDEN

Hewlett-Packard Sverige AB  
Enighetsvagen 3  
S-16120 **BROMMA**  
Tel: (08) 730-0550  
Telex: (854) 10721 MESSAGES  
Cable: MEASUREMENTS  
A,CM,CP,E,MS,P  
Hewlett-Packard Sverige AB  
Sunnanvagen 14K  
S-22226 **LUND**  
Tel: (46) 13-69-79  
CM,CS  
Hewlett-Packard Sverige AB  
Vastra Vintergatan 9  
S-70344 **OREBRO**  
Tel: (019) 14-07-20  
CM,CS  
Hewlett-Packard Sverige AB  
Frotalligatan 30  
S-42132 **VASTRA-FROLUNDA**  
Tel: (031) 49-09-50  
Telex: 85410721  
CM,CS,E,P

## SWITZERLAND

Hewlett-Packard (Schweiz) AG  
Clarastrasse 12  
CH-4058 **BASEL**  
Tel: (061) 33-59-20  
A,CM  
Hewlett-Packard (Schweiz) AG  
Bahnhofstrasse 44  
3018 **BERN**  
Tel: (031) 56-24-22  
CM  
Hewlett-Packard (Schweiz) AG  
47 Avenue Blanc  
CH-1202 **GENEVA**  
Tel: (022) 32-30-05, 32-48-00  
CM,CP  
Hewlett-Packard (Schweiz) AG  
29 Chemin Chateau Bloc  
CH-1219 **LE LIGNON**-Geneva  
Tel: (022) 96-03-22  
Telex: 27333 hpag ch  
Cable: HEWPACKAG Geneva  
A,CM,E,MS,P  
Hewlett-Packard (Schweiz) AG  
Zurcherstrasse 20  
P.O. Box 307  
CH-8952 **SCHLIEREN**-Zurich  
Tel: (01) 730-5240, 730-1821  
Telex: 53933 hpag ch  
Cable: HPAG CH  
A,CM,CP,E,MS,P

## SYRIA

General Electronic Inc.  
Nuri Basha-Ahnaf Ebn Kays Street  
P.O. Box 5781  
**DAMASCUS**  
Tel: 33-24-87  
Telex: 11215 ITIKAL  
Cable: ELECTROBOR DAMASCUS  
E  
Sawah & Co.  
Place Azme  
Boite Postale 2308  
**DAMASCUS**  
Tel: 16-367, 19-697, 14-268  
Telex: 11304 SATACO SY  
Cable: SAWAH, DAMASCUS  
M  
Suleiman Hilal El Mlawi  
P.O. Box 2528  
Mamoun Bilar Street, 56-58  
**DAMASCUS**  
Tel: 11-46-63  
Telex: 11270  
Cable: HILAL DAMASCUS  
M

## TAIWAN

Hewlett-Packard Far East Ltd.  
Kaohsiung Branch  
68-2, Chung Cheng 3rd Road  
Shin Shin, Chu  
**KAOHSIUNG**  
Tel: 241-2318, 261-3253  
CS,E,MS,P  
Hewlett-Packard Far East Ltd.  
Taiwan Branch  
Bank Tower, 5th Floor  
205 Tun Hwa North Road  
**TAIPEI**  
Tel: 751-0404  
Cable: HEWPACK Taipei  
A\*,CP,E,MS,P  
San Kwang Instruments Co., Ltd.  
20 Yung Sui Road  
**TAIPEI**  
Tel: 361-5446, 361-5447,  
361-5448, 361-5449  
Telex: 22894 SANKWANG  
Cable: SANKWANG Taipei  
A

## TANZANIA

International Aeradio (E.A.) Ltd.  
P.O. Box 861  
**DAR ES SALAAM**  
Tel: 21251  
Telex: 41030  
M

## THAILAND

UNIMESA Co. Ltd.  
Elcom Research Building  
2538 Sukhumvit Ave.  
Bangchak, **BANGKOK**  
Tel: 393-2387, 393-0338  
Telex: TH81160, 82938, 81038  
Cable: UNIMESA Bangkok  
A,E,M  
Bangkok Business Equipment Ltd.  
5/5-6 Dejo Road  
**BANGKOK**  
Tel: 234-8670, 234-8671,  
234-8672, 234-8673  
Cable: BUSIQUIPT Bangkok  
P

## TRINIDAD & TOBAGO

CARTEL  
Caribbean Telecoms Ltd.  
P.O. Box 732  
50/A Jerningham Avenue  
**PORT-OF-SPAIN**  
Tel: 62 4214, 62 4213  
A,E,M,P



# SALES & SUPPORT OFFICES

Arranged alphabetically by country



## TUNISIA

*Tunisie Electronique*  
31 Avenue de la Liberte  
**TUNIS**  
Tel: 280-144  
E,P

*Corema*  
1 ter. Av. de Carthage  
**TUNIS**  
Tel: 253-821  
Telex: 12319 CABAM TN  
M

## TURKEY

*Teknim Company Ltd.*  
Riza Sah Pehlivi  
Caddesi No. 7  
Kavaklidere, **ANKARA**  
Tel: 275800  
Telex: 42155  
E

## UNITED ARAB EMIRATES

*Emilac Ltd.*  
P.O. Box 2711  
**ABU DHABI**  
Tel: 331370, 331371  
E,M,P  
*Emilac Ltd.*  
P.O. Box 1641  
**SHARJAH**  
Tel: 354121, 354123  
Telex: 68136  
E,M,P

## UNITED KINGDOM GREAT BRITAIN NORTHERN IRELAND SCOTLAND

## UNITED STATES OF AMERICA

**Alabama**  
Hewlett-Packard Co.  
700 Century Park South  
Suite 128  
**BIRMINGHAM, AL** 35226  
Tel: (205) 822-6802  
CM,CS,MP  
Hewlett-Packard Co.  
P.O. Box 4207  
8290 Whitesburg Drive, S.E.  
**HUNTSVILLE, AL** 35802  
Tel: (205) 881-4591  
CM,CP,E,M\*

**Alaska**  
Hewlett-Packard Co.  
1577 "C" Street, Suite 252  
**ANCHORAGE, AK** 99510  
Tel: (206) 454-3971  
CM,CS\*\*

**Arizona**  
Hewlett-Packard Co.  
2336 East Magnolia Street  
**PHOENIX, AZ** 85034  
Tel: (602) 273-8000  
A,CM,CP,E,MS  
Hewlett-Packard Co.  
2424 East Aragon Road  
**TUCSON, AZ** 85706  
Tel: (602) 889-4661  
CM,CS,E,MS\*\*

**Arkansas**  
Hewlett-Packard Co.  
P.O. Box 5646  
Brady Station  
**LITTLE ROCK, AR** 72215  
Tel: (501) 376-1844  
CM,MS

## California

Hewlett-Packard Co.  
7621 Canoga Avenue  
**CANOGA PARK, CA** 91304  
Tel: (213) 702-8300  
A,CM,CP,E,P

Hewlett-Packard Co.  
1579 W. Shaw Avenue  
**FRESNO, CA** 93771  
Tel: (209) 224-0582  
CM,MS

Hewlett-Packard Co.  
1430 East Orangethorpe  
**FULLERTON, CA** 92631  
Tel: (714) 870-1000  
CM,CP,E,MP  
Hewlett-Packard Co.  
5400 W. Rosecrans Boulevard  
**LOS ANGELES, CA** 90260  
Tel: (213) 970-7500  
CM,CP,MP

Hewlett-Packard Co.  
3939 Lankersham Blvd.  
**NORTH HOLLYWOOD, CA** 91604  
Tel: (213) 877-1282  
regional headquarters

Hewlett-Packard Co.  
3200 Hillview Avenue  
**PALO ALTO, CA** 94304  
Tel: (415) 857-8000  
CM,CP,E

Hewlett-Packard Co.  
646 W. North Market Boulevard  
**SACRAMENTO, CA** 95834  
Tel: (916) 929-7222  
A\*,CM,CS,E,MS

Hewlett-Packard Co.  
9606 Aero Drive  
P.O. Box 23333  
**SAN DIEGO, CA** 92123  
Tel: (714) 279-3200  
CM,CP,E,MP

Hewlett-Packard Co.  
363 Brookhollow Drive  
**SANTA ANA, CA** 92705  
Tel: (714) 641-0977  
A,CM,C\*,E

Hewlett-Packard Co.  
3003 Scott Boulevard  
**SANTA CLARA, CA** 95050  
Tel: (408) 988-7000  
A,CM,CP,E,MP

Hewlett-Packard Co.  
454 Carlton Court  
**SO. SAN FRANCISCO, CA** 94080  
Tel: (415) 877-0772  
CM,CP

**Colorado**  
Hewlett-Packard Co.  
5600 DTC Parkway  
**ENGLEWOOD, CO** 80110  
Tel: (303) 771-3455  
A,CM,CP,E,MS

**Connecticut**  
Hewlett-Packard Co.  
47 Barnes Industrial Road South  
P.O. Box 5007  
**WALLINGFORD, CT** 06492  
Tel: (203) 265-7801  
A,CM,CP,E,MS

**Florida**  
Hewlett-Packard Co.  
P.O. Box 24210  
2727 N.W. 62nd Street  
**FORT LAUDERDALE, FL** 33309  
Tel: (305) 973-2600  
CM,CP,E,MP

Hewlett-Packard Co.  
4080 Woodcock Drive, #132  
Brownell Building  
**JACKSONVILLE, FL** 32207  
Tel: (904) 398-0663  
CM,C\*,E\*,MS\*\*

Hewlett-Packard Co.  
P.O. Box 13910  
6177 Lake Ellenor Drive  
**ORLANDO, FL** 32809  
Tel: (305) 859-2900  
A,CM,CP,E,MS

Hewlett-Packard Co.  
P.O. Box 12826  
Suite 5, Building 1  
Office Park North  
**PENSACOLA, FL** 32575  
Tel: (904) 476-8422  
A,CM,MS

Hewlett-Packard Co.  
110 South Hoover, Suite 120  
**TAMPA, FL** 33609  
Tel: (813) 872-0900  
A\*,CM,CS,E\*,M\*

## Georgia

Hewlett-Packard Co.  
P.O. Box 105005  
450 Interstate N. Parkway  
**ATLANTA, GA** 30339  
Tel: (404) 955-1500  
Telex: 810-766-4890  
A,CM,CP,E,MP

Hewlett-Packard Co.  
Executive Park Suite 306  
P.O. Box 816  
**AUGUSTA, GA** 30903  
Tel: (404) 736-0592  
CM,MS

Hewlett-Packard Co.  
P.O. Box 2103  
1172 N. Davis Drive  
**WARNER ROBINS, GA** 31098  
Tel: (912) 922-0449  
CM,E

## Hawaii

Hewlett-Packard Co.  
2875 South King Street  
**HONOLULU, HI** 96826  
Tel: (808) 955-4455  
A,CM,CS,E,MS

## Idaho

Hewlett-Packard Co.  
11311 Chinden Boulevard  
**BOISE, ID** 83707  
Tel: (208) 376-6000  
CM,CS,M\*

## Illinois

Hewlett-Packard Co.  
211 Prospect Road  
**BLOOMINGTON, IL** 61701  
Tel: (309) 663-0383  
CM,CS,MS\*\*

Hewlett-Packard Co.  
1100 31st Street  
**DOWNERS GROVE, IL** 60515  
Tel: (312) 960-5760  
CM,CP

Hewlett-Packard Co.  
5201 Tollview Drive  
**ROLLING MEADOWS, IL** 60008  
Tel: (312) 255-9800  
A,CM,CP,E,MP

## Indiana

Hewlett-Packard Co.  
P.O. Box 50807  
7301 No. Shadeland Avenue  
**INDIANAPOLIS, IN** 46250  
Tel: (317) 842-1000  
A,CM,CS,E,MS

## Iowa

Hewlett-Packard Co.  
5815 S.W. 5th Street  
**DES MOINES, IA** 50315  
Tel: (515) 243-5876  
CM,MS\*\*

Hewlett-Packard Co.  
2415 Heinz Road  
**IOWA CITY, IA** 52240  
Tel: (319) 351-1020  
CM,CS,E\*,MS

## Kansas

Hewlett-Packard Co.  
514 South Westview  
**DERBY, KA** 67037  
Tel: (316) 265-5200  
CM,CS

## Kentucky

Hewlett-Packard Co.  
10170 Linn Station Rd., Suite 525  
Atkinson Square  
**LOUISVILLE, KY** 40223  
Tel: (502) 426-0100  
A,CM,CS,MS

## Louisiana

Hewlett-Packard Co.  
P.O. Box 1449  
3229 Williams Boulevard  
**KENNER, LA** 70062  
Tel: (504) 443-6201  
A,CM,CS,E,MS

## Maryland

Hewlett-Packard Co.  
7121 Standard Drive  
**HANOVER, MD** 21076  
Tel: (301) 796-7700  
A,CM,CP,E,MS  
Hewlett-Packard Co.  
2 Choke Cherry Road  
**ROCKVILLE, MD** 20850  
Tel: (301) 948-6370  
A,CM,CP,E,MP

## Massachusetts

Hewlett-Packard Co.  
32 Hartwell Avenue  
**LEXINGTON, MA** 02173  
Tel: (617) 861-8960  
A,CM,CP,E,MP

## Michigan

Hewlett-Packard Co.  
23855 Research Drive  
**FARMINGTON HILLS, MI** 48024  
Tel: (313) 476-6400  
A,CM,CP,E,MP

Hewlett-Packard Co.  
4326 Cascade Road S.E.  
**GRAND RAPIDS, MI** 49506  
Tel: (616) 957-1970  
CM,CS,MS

## Minnesota

Hewlett-Packard Co.  
2025 W. Larpenteur Ave.  
**ST. PAUL, MN** 55113  
Tel: (612) 644-1100  
A,CM,CP,E,MP

## Mississippi

Hewlett-Packard Co.  
322 N. Mart Plaza  
**JACKSON, MS** 39206  
Tel: (601) 982-9363  
CM,MS

## Missouri

Hewlett-Packard Co.  
11131 Colorado  
**KANSAS CITY, MO** 64137  
Tel: (816) 763-8000  
Telex: 910-771-2087  
A,CM,CS,E,MS

Hewlett-Packard Co.  
1024 Executive Parkway  
**ST. LOUIS, MO** 63141  
Tel: (314) 878-0200  
A,CM,CP,E,MP

## Nebraska

Hewlett-Packard  
Suite 101  
7101 Mercy Road  
**OMAHA, NE** 68106  
Tel: (402) 392-0948  
CM,MS

## Nevada

Hewlett-Packard Co.  
Suite D-130  
5030 Paradise Blvd.  
**LAS VEGAS, NV** 89119  
Tel: (702) 736-6610  
CM,MS\*\*

## New Jersey

Hewlett-Packard Co.  
W120 Century Road  
**PARAMUS, NJ** 07652  
Tel: (201) 265-5000  
A,CM,CP,E,MP  
Hewlett-Packard Co.  
60 New England West  
**PISCATAWAY, NJ** 08854  
Tel: (201) 981-1199  
A,CM,CP,E

## New Mexico

Hewlett-Packard Co.  
P.O. Box 11634  
Station E  
11300 Lomas Blvd., N.E.  
**ALBUQUERQUE, NM** 87192  
Tel: (505) 292-1330  
Telex: 910-989-1185  
CM,CP,E,MS  
Hewlett-Packard Co.  
156 Wyatt Drive  
**LAS CRUCES, NM** 88001  
Tel: (505) 526-2484  
Telex: 910-9983-0550  
CM,C\*,E,M\*

## New York

Hewlett-Packard Co.  
6 Automation Lane  
Computer Park  
**ALBANY, NY** 12205  
Tel: (518) 458-1550  
Telex: 710-444-4691  
A,CM,CS,E,MS  
Hewlett-Packard Co.  
650 Perinton Hill Office Park  
**FAIRPORT, NY** 14450  
Tel: (716) 223-9950  
Telex: 510-253-0092  
CM,CP,E,MS  
Hewlett-Packard Co.  
No. 1 Pennsylvania Plaza  
55th Floor  
34th Street & 8th Avenue  
**NEW YORK, NY** 10001  
Tel: (212) 971-0800  
CM,CP,E\*,M\*

Hewlett-Packard Co.  
5858 East Molloy Road  
**SYRACUSE, NY** 13211  
Tel: (315) 455-2486  
A,CM,CS,E,MS

Hewlett-Packard Co.  
3 Crossways Park West  
**WOODBURY, NY** 11797  
Tel: (516) 921-0300  
Telex: 510-221-2183  
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# SALES & SUPPORT OFFICES

Arranged alphabetically by country

## North Carolina

Hewlett-Packard Co.  
5605 Roanne Way  
GREENSBORO, NC 27409  
Tel: (919) 852-1800  
A,CM,CP,E,MS

## Ohio

Hewlett-Packard Co.  
9920 Carver Road  
CINCINNATI, OH 45242  
Tel: (513) 891-9870  
CM,CP,MS

Hewlett-Packard Co.  
16500 Sprague Road  
CLEVELAND, OH 44130  
Tel: (216) 243-7300  
Telex: 810-423-9430  
A,CM,CP,E,MS

Hewlett-Packard Co.  
962 Crupper Ave.  
COLUMBUS, OH 43229  
Tel: (614) 432-1041  
CM,CP,E\*

Hewlett-Packard Co.  
330 Progress Rd.  
DAYTON, OH 45449  
Tel: (513) 859-8202  
A,CM,CP,E\*,MS

## Oklahoma

Hewlett-Packard Co.  
P.O. Box 32008  
6301 N. Meridan Avenue  
OKLAHOMA CITY, OK 73122  
Tel: (405) 721-0200  
A\*,CM,CP,E\*,MS

Hewlett-Packard Co.  
Suite 121  
9920 E. 42nd Street  
TULSA, OK 74145  
Tel: (918) 665-3300  
A\*\*,CM,CS,M\*

## Oregon

Hewlett-Packard Co.  
9255 Pioneer Court  
WILSONVILLE, OR 97070  
Tel: (503) 682-8000  
A,CM,CP,E\*,MS

## Pennsylvania

Hewlett-Packard Co.  
Crystal Brook Professional Building  
Route 35  
EATONTOWN, PA 07724

Tel: (201) 542-1384  
A\*,CM,C\*,E\*,P\*

Hewlett-Packard Co.  
1021 8th Avenue  
King of Prussia Industrial Park  
KING OF PRUSSIA, PA 19406  
Tel: (215) 265-7000  
Telex: 510-660-2670  
A,CM,CP,E,MP

Hewlett-Packard Co.  
111 Zeta Drive  
PITTSBURGH, PA 15238  
Tel: (412) 782-0400  
A,CM,CP,E,MP

## South Carolina

Hewlett-Packard Co.  
P.O. Box 6442  
6941-1 N. Trenholm Road  
COLUMBIA, SC 29260  
Tel: (803) 782-6493  
CM,CS,E,MS

## Tennessee

Hewlett-Packard Co.  
8906 Kingston Pike  
KNOXVILLE, TN 37919  
Tel: (615) 691-2371  
A\*,CM,MS

Hewlett-Packard Co.  
3070 Directors Row  
Directors Square  
MEMPHIS, TN 38131  
Tel: (901) 346-8370  
A,CM,CS,MS

Hewlett-Packard Co.  
Suite 103  
478 Craighead Street  
NASHVILLE, TN 37204  
Tel: (615) 383-9130  
CM,MS\*\*

## Texas

Hewlett-Packard Co.  
Suite 310W  
7800 Shoalcreek Blvd.  
AUSTIN, TX 78757  
Tel: (512) 459-3143  
CM,E

Hewlett-Packard Co.  
Suite C110  
4171 North Mesa  
EL PASO, TX 79902  
Tel: (915) 533-3555  
CM,CS,E\*,MS\*\*  
Hewlett-Packard Co.  
5020 Mark IV Parkway  
FORT WORTH, TX 76106  
Tel: (817) 625-6361  
CM,C\*

Hewlett-Packard Co.  
10535 Harwin Street  
HOUSTON, TX 77036  
Tel: (713) 776-6400  
A,CM,CP,E,MP

Hewlett-Packard Co.  
P.O. Box 1270  
930 E. Campbell Rd.  
RICHARDSON, TX 75081  
Tel: (214) 231-6101  
A,CM,CP,E,MP  
Hewlett-Packard Co.  
205 Billy Mitchell Road  
SAN ANTONIO, TX 78226  
Tel: (512) 434-8241  
CM,CS,E,MS

## Utah

Hewlett-Packard Co.  
3550 W. 2100 South Street  
SALT LAKE CITY, UT 84119  
Tel: (801) 974-1700  
A,CM,CP,E,MS

## Virginia

Hewlett-Packard Co.  
P.O. Box 9669  
2914 Hungary Spring Road  
RICHMOND, VA 23228  
Tel: (804) 285-3431  
A,CM,CP,E,MS

Hewlett-Packard Co.  
3110 Peters Creek Road, N.W.  
ROANOKE, VA 24015  
Tel: (703) 922-7000  
CM,CS,E\*\*

Hewlett-Packard Co.  
5700 Thurston Avenue  
VIRGINIA BEACH, VA 23455  
Tel: (804) 460-2471  
CM,CS,MS

## Washington

Hewlett-Packard Co.  
Bellefield Office Park  
1203 114th Ave. S.E.  
BELLEVUE, WA 98004  
Tel: (206) 454-3971  
A,CM,CP,E,MP

Hewlett-Packard Co.  
Suite A-1  
708 North Argonne Road  
SPOKANE, WA 99206  
Tel: (509) 535-0864  
CM,CS

## West Virginia

Hewlett-Packard Co.  
4604 MacCorkle Ave., S.E.  
CHARLESTON, WV 25304  
Tel: (304) 925-0492  
A,CM,MS

## Wisconsin

Hewlett-Packard Co.  
150 S. Sunny Slope Road  
BROOKFIELD, WI 53005  
Tel: (414) 784-8800  
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## URUGUAY

Pablo Ferrando S.A.C. e.l.  
Avenida Italia 2877  
Casilla de Correo 370  
MONTEVIDEO  
Tel: 40-3102  
Telex: 901 Public Booth Para Pablo  
Ferrando 919520  
Cable: RADIUM Montevideo  
A,E,M  
Guillermo Kraft del Uruguay S.A.  
Avda. Libertador Brig. Gral.  
Lavalleja 2083  
MONTEVIDEO  
Tel: 23 45 88, 23 48 08, 20 88 30  
P

## VENEZUELA

Hewlett-Packard de Venezuela C.A.  
P. O. Box 50933  
3a Transversal Los Ruices Norte  
Edificio Segre 2Y3  
CARACAS 1071  
Tel: 239-4133  
Telex: 25146 HEWPACK  
Cable: HEWPACK Caracas  
A,CP,E,MS,P

## YUGOSLAVIA

Iskra Commerce, n. sol. o.  
Zastopstvo Hewlett-Packard  
Obilicev Venac 26  
YU 11000 BEOGRAD  
Tel: 636955  
Telex: 11530  
C\*,E\*,M\*,P\*

Iskra Commerce, n. sol. o.  
Zastopstvo Hewlett-Packard  
Miklosiceva 38/VII  
YU-61000 LJUBLJANA  
Tel: 321674, 315870  
Telex: 31300  
C\*,E\*,M\*,P\*

## ZAMBIA

R.J. Tilbury (Zambia) Ltd.  
P.O. Box 2792  
LUSAKA  
Tel: 81243  
A,E,M,P

## FOR COUNTRIES AND AREAS NOT LISTED:

### CANADA

#### Ontario

Hewlett-Packard (Canada) Ltd.  
6877 Goreway Drive  
MISSISSAUGA, Ontario L4V 1M8  
Tel: (416) 678-9430  
Telex: 610-492-4246

### EASTERN USA

#### New Jersey

Hewlett-Packard Co.  
W120 Century Road  
PARAMUS, NJ 07652  
Tel: (201) 265-5000

### MIDWESTERN USA

#### Illinois

Hewlett-Packard Co.  
5201 Tollview Drive  
ROLLING MEADOWS, IL 60008  
Tel: (312) 255-9800

### SOUTHERN USA

#### Georgia

Hewlett-Packard Co.  
P.O. Box 105005  
450 Interstate N. Parkway  
ATLANTA, GA 30339  
Tel: (404) 955-1500  
Telex: 810-766-4890

### WESTERN USA

#### California

Hewlett-Packard Co.  
3939 Lankersham Blvd.  
NORTH HOLLYWOOD, CA 91604  
Tel: (213) 877-1282

## EAST EUROPEAN AREAS

### AUSTRIA

Hewlett-Packard Ges.m.b.H.  
Wehlstrasse 29  
P.O. Box 7  
A-1205 VIENNA, Austria  
Tel: (222) 35-16-20  
Telex: 135823/135066

## EUROPEAN AREAS

### SWITZERLAND

Hewlett-Packard S.A.  
7 Rue du Bois-du-Lan  
CH-1217 MEYRIN 2, Switzerland  
Tel: (022) 98-96-51  
Telex: 27835 hpse  
Cable: HEWPACKSA Geneve

## MEDITERRANEAN AND MIDDLE EAST AREAS

### GREECE

Hewlett-Packard S.A.  
Mediterranean & Middle East  
Operations  
35 Kolokotroni St.  
Platia Kefallariou  
GR-Kifissia, ATHENS, Greece  
Tel: 808-0359, 808-0429  
Telex: 21-6588  
Cable: HEWPACKSA Athens

## OTHER AREAS

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